California Environmental Protection Agency
Department of Toxic Substances Control

HAZARDOUS WASTE FACILITY PERMIT

Permit Number: **99-NC-006**

Facility Name:
Lawrence Livermore National Laboratory

Owner Name:
U.S. Department of Energy

Operator Name:
University of California Regents and U.S. Department of Energy

Facility EPA ID Number:	CA2890012584
Effective Date of Permit:	November 19, 1999
Expiration Date of Permit:	November 19, 2009
Date Modified:	September 26, 2001
Modification Number:	**MOD NC2-092601-A**

Pursuant to Section 66270.42, Title 22, Division 4.5, California Code of Regulations, the Hazardous Waste Facility Permit issued May 27, 1999, effective November 19, 1999, is hereby modified to address item 6A and 6B of the Settlement Agreement reached in Alameda County Case No. 821072-4. Pages 1, 2, 3, 5, 8, and 11 through 17 of the May 27, 1999 permit are affected by this modification. Appendix A, Permit Modification History, was added. The Department of Toxic Substances Control is also incorporating in the Permit Modification History (Appendix A) 33 Class 1 modifications that went into effect on January 21, 2001, and one Class 1* modification that went into effect on July 16, 2001. Revised pages, labeled as "Revised September 26, 2001" are hereby incorporated into the approved permit, replacing the original pages. The revised permit consists of 49 pages, including Appendix A, and Exhibit A which consists of 7 pages.

Mohinder S. Sandhu, P.E., Chief
Standardized Permits and Corrective Action Branch
Department of Toxic Substances Control

Date: September 26, 2001

ATTACHMENT A

LAWRENCE LIVERMORE NATIONAL LABORATORY
7000 East Avenue
Livermore, California 94720

HAZARDOUS WASTE FACILITY PERMIT

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PART I. DEFINITIONS

All terms used in this permit shall have the same meaning as those terms have in the California Health and Safety Code, Chapter 6.5 and Title 22, California Code of Regulations (Cal. Code Regs.), unless expressly provided otherwise by this permit.

1. **"DTSC"** as used herein shall refer to the California Environmental Protection Agency, Department of Toxic Substances Control.

2. **"Permittee"** as used herein shall refer to the Owner and/or Operator.

3. **"Mixed waste"** as used herein shall refer to waste that contains both hazardous waste, as defined by the Resource Conservation and Recovery Act (RCRA) and a source, special nuclear, or by product material, regulated under the Atomic Energy Act (42 U.S.C. 2011 et. Seq.).

4. **"FFCA"** as used herein shall refer to the Federal Facility Compliance Act of 1992.

5. **"STP"** as used herein shall refer to the Site Treatment Plan for Lawrence Livermore National Laboratory, prepared pursuant to the Federal Facility Compliance Act by the U.S. Department of Energy, dated February 1997.

PART II. DESCRIPTION OF THE FACILITY

1. OWNER

Lawrence Livermore National Laboratory (LLNL) is a national laboratory owned by the United States Department of Energy (DOE).

2. OPERATOR

LLNL is jointly operated by the University of California Regents (UC) and the United States Department of Energy pursuant to an agreement between DOE and UC. In subsequent sections, hereinafter, both the LLNL and DOE will be referred to as "Permittee". Said entities have applied to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) for a Hazardous Waste Facility Permit (Permit).

3. LOCATION

Physical Address:	7000 East Avenue, Livermore Alameda County, California 94550-0516
Mailing Address:	Lawrence Livermore National Laboratory P.O. Box 808, L-668 Livermore, California 94551-0808
Assessor's Parcel Number:	99A-1475-005-7 (Section 12, Township 3 South, Range 2 East, Mount Diablo Base and Meridian)

4. OPERATIONS

The Permittee operates a research and development facility that occupies approximately 823 acres. The facility has been used since 1951 to conduct research and development programs on nuclear weapons, magnetic fusion, energy, lasers, biomedical and environmental sciences, and applied energy technology. In addition to the research and development activities, other activities at the facility include numerous institutional support operations which supply security, occupational safety, employee health services, fire suppression, emergency response, facility and infrastructure maintenance and construction, environmental and public protection, and waste management.

The research and development programs and support operations generate non-hazardous, hazardous, radioactive and mixed wastes. Hazardous and mixed waste treatment processes conducted at the facility include both chemical and physical treatment. The Permittee also stores hazardous and mixed wastes at the facility in containers and tanks.

The hazardous and mixed waste management units authorized under this permit are in areas designated as:

Building 280 Container Storage Unit (CSU) (figure 2),

Area 612 Storage/Treatment Unit Group (S/TUG) (figure 3),

Building 693 CSU Group (figures 4 and 5), and

Building 695 S/TUG (figures 4 and 6).

Buildings 693 and 695 are located at the northeastern corner of the LLNL property. These buildings, along with several adjacent support buildings, are commonly known as the DWTF (Decontamination and Waste Treatment Facility) (see figure 4).

Area 514, Building 233 and Building 419 (figure 1) are areas that have been operated under the authority of an Interim Status Document (ISD) issued to LLNL by the State in 1983. Area 514 is the existing wastewater treatment area. It will be replaced by Building

695 S/TUG. Building 233 is the higher-curie, classified mixed waste storage area. It will be replaced by Building 280 CSU. The size reduction and solidification units were operated in Building 419. Building 419 is currently inactive and undergoing closure. It has been replaced by the Size Reduction Unit at Building 612 and the Solidification Unit at Building 513 (Note: Solidification Unit to be moved to Building 695 S/TUG). Area 514 and Building 233 units will be closed after Building 695 S/TUG and Building 280 CSU are constructed and become operable. For Area 514, the transition of operation from the ISD units to the permitted units and the closure milestones are described in Exhibit A, “Transition Plan, Transfer of Existing Waste Treatment Units to the Decontamination and Waste Treatment Facility”, LLNL, February 1997.

Each of the Storage/Treatment Unit Groups is comprised of the individual treatment and storage units listed in Table 1 of this permit. The Groups are described in the Part A and Part B application which is incorporated herein as the Operation Plan. Only the units, capacities and waste types specified in the Operation Plan and this Permit are authorized for hazardous waste management activities under this Permit.

5. SIZE AND TYPE FOR ANNUAL FACILITY FEES

LLNL is categorized as a large storage facility and as a small treatment facility. In accordance with H&SC Section 25205.4(d), LLNL shall pay only the facility fees applicable to a large storage facility.

6. PERMIT MODIFICATION HISTORY

Modifications to this Permit or the Operations Plan identified in Part IV.1 of this permit are allowed as per 22 CCR Sections 66270.41 or 66271.42. All modifications made to this permit and/or operation plan are listed and described in Appendix A to this permit.

PART III. GENERAL CONDITIONS

1. PERMIT APPLICATION DOCUMENTS

The Part "A" Application dated October 1998 and the Part "B" Application titled *U.S. Department of Energy Part B Permit Application for Hazardous Waste Treatment and Storage Facilities, Livermore Site, EPA ID No. CA2890012584*, Volumes 1-11, dated October 1998 (Operation Plan), are hereby approved and made a part of this permit by reference. This Operation Plan and any subsequent revisions thereto are subject to the permit modification requirements contained in 22 CCR Sections 66270.41 and 66270.42

2. EFFECT OF PERMIT

(a) The Permittee shall comply with the provisions of Division 20 of the California Health and Safety Code, including, but not limited to Chapters 6.5 and 6.7, and Division 4.5 of Title 22, California Code of Regulations (CCR). The issuance of this Permit by DTSC does not release the Permittee from any liability or duty imposed by federal or state statutes or regulations or local ordinances, except the obligation to obtain this Permit. In particular, the Permittee shall obtain the permits required by other governmental agencies, at the federal, state and local levels under all applicable laws, including but not limited to, the applicable land use planning, zoning, hazardous waste, air quality, water quality, and solid waste management laws for the construction and/or operation of the facility.

(b) The Permittee is permitted to treat and store hazardous wastes in accordance with the conditions of this Permit. Any treatment or storage of hazardous wastes not specifically authorized in this Permit is strictly prohibited.

(c) Compliance with the terms of this Permit does not constitute a defense to any action brought under any other law governing protection of public health or the environment, including, but not limited to, one brought for any imminent and substantial endangerment to human health or the environment.

(d) DTSC's issuance of this Permit does not prevent DTSC from adopting or amending regulations that impose additional or more stringent requirements than those in existence at the time this Permit is issued and does not prevent the enforcement of these requirements against the Permittee of the permitted facility.

(e) Failure to comply with any term or condition set forth in this Part of the Permit in the time or manner specified herein will subject the Permittee to possible enforcement action and penalties pursuant to H&SC Section 25187.

(f) In addition, failure to submit any information required in connection with the Permit, or falsification and/or misrepresentation of any submitted information, is grounds for termination of the Permit (CCR section 66270.43).

(g) This Permit includes and incorporates by reference any conditions of waste discharge requirements issued by the State Water Resources Control Board or any of the California Regional Water Quality Control Boards and any conditions imposed pursuant to section 13227 of the Water Code.

3. PERMITTED AND PROHIBITED WASTE

(a) The Permittee shall not store and/or treat hazardous or mixed wastes in containers or tanks which are not specified in the approved Operation Plan.

(b) The Permittee shall not store and/or treat hazardous or mixed wastes that are not identified under "Typical waste streams" for each Form Code listed in Table 2 of this Permit.

(c) The Permittee shall not accept any hazardous or mixed wastes generated by commercial or government facilities other than Lawrence Livermore National Laboratory Site 300, EPA ID No. CA2890090002.

4. COMPLIANCE WITH CALIFORNIA ENVIIROINMENTAL QUALITY ACT (CEQA)

DTSC has adopted a Negative Declaration for this project in accordance with the California Environmental Quality Act (Public Resource Code, Section 21000, et seq) and the CEQA Guidelines, Section 15070 et seq. of Title 14, California Code of Regulations. The Negative Declaration finds that, based on the initial study conducted, DTSC has determined that the project will not cause a significant adverse impact on the environment. If this project is approved, DTSC will complete a Notice of Determination, certifying that the Negative Declaration is in compliance with the provisions of CEQA.

5. RECORD PRESERVATION

The Permittee shall retain, during the term of this Permit, all records gathered or generated for activities undertaken pursuant to this Permit. All such documents shall be stored at the facility or at other locations approved in writing by DTSC and be made available to DTSC or its representatives upon request. The Permittee shall notify DTSC in writing at least 90 days prior to final expiration of this Permit, and shall provide DTSC with the opportunity to take possession of any such records. Such written notification shall reference this Permit (including expiration date) and shall be addressed to DTSC Project Coordinator.

6. OPTION TO CEASE OPERATION

If the Permittee decides to cease conducting regulated activities, the Permittee shall comply with the applicable requirements of CCR section 66270.33(b).

7. WASTE MINIMIZATION CONDITIONS

The Permittee shall comply with the Hazardous Waste Source Reduction and Management Review Act (SB 14) requirements that are specified in the H&SC, sections 25244.19, 25244.20 and 25244.21, and any subsequent applicable statutes or regulations promulgated thereunder.

The Permittee shall submit documents required by SB 14 to DTSC.

PART IV. SPECIAL CONDITIONS

1. OPERATION PLAN

(a) The Permittee shall operate and maintain the facility in accordance with the approved Operation Plan.

(b) In the event of any conflict between this document and the approved Operation Plan, the more stringent provisions shall control.

(c) The approved Operation Plan and this document shall be maintained at the facility and place of business at all times until closure is completed.

2. DELAYED CLOSURE

This Permit authorizes the Permittee to implement the delayed closure of the following units in accordance with DTSC Management Memo EO-94-003-MM:

-Area 6 12-4 Receiving, Segregation and Container Storage Unit,

-Building 612 Lab Packing Unit, consisting of rooms 104, 105 and 107.

Within 15 calendar days of the effective date of this Permit, the above units shall revert to generator status. These units shall close under applicable facility closure performance standards when final closure of Area 612 is performed.

3. TEMPORARY OPERATION OF INTERIM STATUS UNITS

The Permittee may continue to operate the following units under authorization of Interim Status until the completion of the construction and activation of the DWTF complex and Building 280 CSU:

- Building 233 Container Storage Unit

- Area 514 Treatment and Storage Area, which consists of the following units:
  - Building 513 Solidification Unit
  - Building 513 Shredding Unit
  - Building 513 Container Storage Unit
  - Area 514 Waste Water Filtration Unit
  - Area 514 Waste Water Treatment Tank Farm
  - Area 5 14-1 Container Storage Unit
  - Area 514-2 Container Storage Unit
  - Area 514-3 Container Storage Unit
  - Area 514 Quadruple Tank Unit

Area 514-1 Tank Blending Unit
Area 514-1 Portable Blending Unit
Area 514-1 Centrifugation Unit
Area 514-1 Cold Vapor Evaporation Unit
Building 514 Silver Recovery Unit (Closed, considered partial closure of Interim Status Units)
Area 514 Storage Tank 514-R501 (Closed, considered partial closure of Interim Status Units)

- Building 419 Size Reduction Unit (Undergoing Closure, considered partial closure of Interim Status Units)

- Building 419 Solidification Unit (Undergoing Closure, considered partial closure of Interim Status Units)

4. CLOSURE PLAN SUBMITTAL

The Permittee shall submit closure plans for Building 233 Container Storage Area and Area 514 Treatment and Storage Area to DTSC no later than 180 days after the permit becomes effective.

5. WASTE ANALYSIS PLAN

(a) Except as specified in (b) below, the Permittee shall follow all procedures described in the Waste Analysis Plan (WAP) contained in the approved Operation Plan upon the effective date of this Permit for any waste managed in the units listed in Table 1 and Part IV.3 of this Permit.

(b) Until all of the tasks listed below are completed, the Permittee shall perform the waste characterization procedures specified in (c) below.

Task	Completion Date
Provide training for personnel required to take Course EP0007	8/11/1999
Have field fingerprint testing capability in place and train personnel on its use	9/1/1999
Have laboratory fingerprint testing operational and train personnel on its use	9/1/1999
Provide training for personnel required to take Course EP0008	9/30/1999
Complete profile for existing wastestreams that have been identified for profiling	2/30/2000

(c) Until tasks described in (b) above are completed, the Permittee shall perform the following:

(1) Newly generated and unprofiled waste shall be characterized through generator knowledge (i.e. his/her knowledge of the waste generating process, physical/chemical properties from experimental data, information from other published sources, or manufacturer's material safety data sheet information). However, whenever generator knowledge is insufficient to adequately characterize the waste for treatment and/or storage, full scale analysis shall be performed in accordance with the WAP.

(2) Ten percent of newly generated and unprofiled waste shall be randomly selected for verification by sampling and analysis on a weekly basis. If some of the ten percent initially selected is exempt from sampling according to the criteria found on page 15, Vol. 4, of the Part B Application, a substitute waste shall be randomly selected to ensure that a full ten percent is sampled and analyzed.

(3) Profiled waste shall be verified a minimum of once per year by performing fingerprint analysis or full scale analysis if fingerprint methods are not available, unless the waste is exempt from sampling according to the criteria found on p. 15, Vol. 4, of the Part B Application. If verification fails, procedures specified in section 4.4.2 of the WAP shall be followed.

(d) On or before December 31, 1999, the Permittee shall implement the WAP in its entirety and Part IV.5.(c) of this Permit shall no longer be applicable.

6. DECONTAMINATION PROCEDURES

Within 180 days of the effective date of the Permit, the Permittee shall submit to DTSC for review and approval/concurrence with the descriptions of decontamination procedures to be performed for any Building 695 treatment units that will be used to treat both radioactive and non-radioactive wastes. The procedures shall be designed to reduce the generation of mixed waste. For those units for which decontamination procedures will not be provided, the rationale explaining why the decontamination procedures are not warranted shall be submitted instead to DTSC for review and approval/concurrence that decontamination is not warranted.

Upon approval, these descriptions shall be included as amendments to the "Management Practices" section of the approved Operation Plan.

7. TRANSITION PLAN

The Permittee shall follow the Transition Plan, attached hereto as Exhibit A, during the construction of, installation of new equipment at, and the transfer of existing equipment from Area 514 to Building 695.

8. SMALL SCALE TREATMENT

(a) Several small scale treatment processes may be conducted within Building 695. Some of these processes have been assigned individual treatment capacities and are considered to be individual treatment units. These are the gas adsorption unit, the uranium bleaching unit, the pressure reactor unit, the water reactor unit and the mercury amalgamation unit, as described in Volume 11, Appendices XIV.4-K through O of the approved Operation Plan. The amount of wastes treated in each of these units shall be limited to 82 kilograms per day (0.09 short tons per day). The gas adsorption unit may be operated in Room 1028. The uranium bleaching unit may be operated in Room 1025. The water reactor may be operated in the atmospheric glove box or in the combination glove box located in Room 1023. The pressure reactor unit and the mercury amalgamation unit may be operated in Room 1017, 1023, or 1025.

(b) Each remaining permitted small scale treatment process is considered to be part of a single treatment unit designated the "Small Scale Treatment Unit". These processes are described in Volume 11, Part XIV.4, Section 7.1 of the approved Operation Plan. The combined total amount of wastes treated using Small Scale Treatment Unit processes shall not exceed 10 gallons or 38 kilograms of wastes in any single day (0.04 short tons per day). The processes that comprise the Small Scale Treatment Unit may be performed in the following areas:

-Room 1017-Small Scale Treatment Laboratory, including Laboratory benches, fume hoods and laboratory equipment;

-Room 1023-Reactive Waste Processing Room, including Perchloric Acid Fume Hoods, Inert Atmosphere Glove Box, Radioisotope Glove Box, and Combination Glove Box;

-Room 1025-Reactive Materials Cell as described in the approved Operation Plan.

(c) The only small scale treatment processes that may be conducted inside Building 695 are those described in this Part IV.8 of the Permit.

(d) The Permittee shall prepare and submit a report to DTSC not later than March 15, 2000 and annually thereafter, that includes the following information for the previous calendar year:

(1) The numbers of, and types, by process, of all Small Scale Treatment Unit activities conducted;

(2) The dates and amounts treated each day by process;

(3) The total amounts of hazardous and mixed waste treated under Small Scale Treatment Unit processes.

9. STORAGE IN TANKS AND CONTAINERS

(a) The total volume of regulated and non-regulated waste and materials including radioactive materials subject to the Atomic Energy Act stored in each unit shall not exceed the storage capacities listed in Table 1 of this Permit. In addition, the cumulative volume of regulated waste stored in all units (including tanks) at any one time shall not exceed 808,000 gallons.

(b) The Permittee may manage non-regulated waste and materials in the permitted hazardous waste management units as long as the Permittee ensures that the storage and treatment of such waste and materials does not interfere with the storage and treatment activities of other waste streams permitted hereunder, and that the management of non-regulated waste and materials is in full compliance with all applicable Federal and State laws and regulations.

(c) Except for the 614 East and 614 West Container Storage Units, used capacity for container storage units, as stated in Table A of the Part A Application, shall be calculated based on the maximum capacity of each container stored in the unit, regardless of the type of waste stored in the container and the amount of waste in each container. In the case of 614 East and 614 West Container Storage Units, the used capacity may be determined by the actual amount of waste held by the containers, provided that a current inventory of the containers and their contained amounts are maintained for each cell in each storage unit and is made available to DTSC upon request.

(d) Containers other than 4'x 4' x 7' storage boxes as described in Appendix IV-C of the approved Operation Plan shall not be stacked more than eight (8) feet high. The 4'x 4' x 7' storage boxes may be stacked three containers high, as long as the Permittee follows the stacking methods described by Appendix VI-C of the approved Operation Plan, and the hazardous waste labeling information required by Cal. Code Regs. Section 66262.34 and Item 12 of this section is readable by a person standing near to the stack without the aid of magnifying devices.

(e) Reactive liquid waste that is incompatible shall be stored in separate secondary containment areas according to the general compatibility guidance provided in Title 22, Cal. Code Regs., Chapter 14, Appendix V. Incompatible waste may be staged for treatment in the liquid waste processing area if kept at approximately

the same grade, placed on secondary containment pallets, and kept with a separation of at least 8 feet.

(f) Incompatible solid wastes may be stored in the same containment area if kept separated by a distance of at least eight feet.

(g) The Building 693 Freezer Storage Unit shall not be used to store waste that is explosive at ambient temperatures.

10. DURATION OF STORAGE

(a) The Permittee is authorized to store hazardous waste, including mixed wastes not incorporated into the Site Treatment Plan (STP) that is incorporated by reference and attached to Compliance Order, HWCA 96/97-5002, 2/7/97, in the permitted storage units up to a maximum of one calendar year from date of first acceptance at any of the hazardous waste management units.

(b) Notwithstanding section (a) of this Part, the Permittee is authorized to store mixed waste which has been incorporated into the STP in the permitted storage units up to a maximum of one calendar year from the date of DOE's respective notice to DTSC pursuant to Section 2.7.1 of the STP.

11. LABELING REQUIREMENTS

(a) Upon receipt at any hazardous waste management unit, the Permittee shall mark the date of acceptance on each container and maintain original generator information on all containers of hazardous and mixed waste until such time as (1) new information is discovered as a result of waste analysis or (2) the waste is treated onsite or shipped from the Permittee's hazardous waste management unit to an off-site treatment or disposal facility. Generator information shall be maintained in accordance with CCR, Title 22, Section 66262.34.

(b) The Permittee shall mark each lab-packed container (hereinafter known as "lab-pack") with the earliest date of acceptance of any original container to be placed into the lab-pack. This date shall be considered the start of the one year storage period specified in Permit Section IV. 10(a) for the lab-pack.

(c) Each lab-pack shall be labeled or marked clearly with the words, "Hazardous or Mixed Waste." Additionally, each lab-pack shall be labeled with the content, quantities, and physical state of the wastes inside the lab-pack, and a statement or statements which call attention to the particular hazardous properties of the wastes (e.g., flammable, reactive, etc.). If there is insufficient space on the hazardous waste label for a full description of the content, quantities, and physical state of the lab-pack, a reference to these items on a packing slip is acceptable. The packing slip

shall be attached to the lab-pack until it is shipped from the Permittee's hazardous waste management unit to an offsite treatment or disposal facility.

12. TREATMENT IN CONTAINERS

(a) Treatment in containers shall only be conducted in Building 695.

(b) The Permittee shall only treat wastes listed in Section XIV of the Part A application and Table II of this permit, subject to the conditions of this permit and the requirements of Cal. Code Regs., Title 22, Division 4.5, Chapter 14. Wastes shall be treated as specified in Section 9 of Volume 4 of the approved Operation Plan (Waste Analysis Plan) and the treatment protocols described in the approved Operation Plan for each treatment unit.

(c) Treatment methods for wastes in 55 gallon drums shall be limited to solidification. Solidification agents may have beneficial secondary effects on the waste beside the solidification, such as flocculation, chelation and adsorption.

(d) Treatment in portable tanks as described by Volume 11 of the approved Operation Plan, Appendix XIV.4-D, Waste Blending Station Process Description, shall be limited to those treatments described in that Appendix and the Waste Analysis Plan.

(e) Treatment in containers shall occur in the Small Scale Treatment Laboratory and Reactive Waste Processing Area in accordance with the small scale treatment protocols as discussed in the Permit, Waste Analysis Plan and Volume 11 of the approved Operation Plan.

(f) Treatment shall be performed only in areas with adequate secondary containment.

13. NOTIFICATION

In the event of a fire, explosion, or an unplanned sudden or non-sudden release of any material to the environment, the Permittee shall note in the operating record the time, date and details of that incident. Within 24 hours, the Permittee shall verbally notify DTSC of the incident. If necessary, DTSC may require that the Permittee submit a report within 15 days of the incident. The report shall include the date, time and type of event; name and quantity of material(s) involved; extent of injuries, if any; an assessment of actual or potential hazards to human health or the environment, where this is applicable; and estimated quantity and disposition of recovered material that resulted from the incident.

14. COMPLIANCE WITH ERPGs

The Chemical Hazards Control Program (as described in Part VI.2.6 and Appendix III.A, Waste Analysis Plan, section 4.3.3 of the Part B Application) shall be implemented to

ensure that mixed or hazardous waste stored and/or treated in any Storage and/or Treatment Unit Group will not result in an accidental chemical release that would exceed the Emergency Response Planning Guidance (ERPG) level 2 or equivalent value at the nearest site boundary.

Each proposed change to hazardous waste operations or hazardous waste facilities which requires completion of an ES&H Integration Worksheet, as described in Part VI.2.1.6 of the Part B Application, must be reviewed to assure that the proposed change will not cause the ERPG-2 (or equivalent) limits to be exceeded at the nearest site boundary. Each proposed change and any additional proposed controls to ensure that the ERPG-2 or equivalent value is not exceeded must be evaluated by LLNL prior to implementation to determine if a permit modification is necessary.

15. PROHIBITION OF ONSITE DISPOSAL

Pursuant to H&SC section 25201(a) and 25203, hazardous wastes shall not be disposed of at the facility.

16. AUTHORITY TO CONSTRUCT

(a) Upon the effective date of this permit, the Permittee shall construct or modify the following units, as shown in Figure 1 of this permit, and as specified in the approved Operation Plan:

Unit Name	Process	Description of Change
Building 280 CSU	Storage	Modify existing structure
Building 693 CSUG	Storage	Install new units in addition to existing B693
Building 695 S/TUG	Storage and Treatment	Construct building and install new units

(b) No later than sixty (60) calendar days after the completion of construction of the storage and/or treatment units specified in Part IV of this permit, the Permittee shall submit to DTSC a certification signed by an independent, qualified, professional engineer, registered in California, in accordance with 22 CCR 66270.11(d) stating that:

(1) the secondary containment system for the container storage units comply with the requirements of 22 CCR 66264.175;

(2) all tank systems and components installed comply with the requirements of 22 CCR 66264.192; and

(3) the secondary containment system for tank systems comply with the requirements of 22 CCR 66264.193(b).

(c) The Permittee shall notify DTSC of any deviations from the plans provided in the approved Operation Plan at least fourteen (14) calendar days prior to construction of the affected portions of new units.

(d) No later than thirty (30) calendar days prior to the construction of the new units, the Permittee shall submit to DTSC a construction schedule detailing the dates and length of time needed for construction.

(e) No later than sixty (60) calendar days after the completion of the new facilities, the Permittee shall submit to DTSC as-built drawings of the completed facilities.

(f) The Permittee shall notify DTSC, in writing, at least thirty (30) calendar days prior to commencement of treatment, storage, or transfer of hazardous or mixed wastes at the new units (Building 280 CSU, the new units in the 693 S/TUG, and Building 695 S/TUG), to allow DTSC the opportunity to inspect the units.

17. CONTINGENCY PLAN

The Permittee shall submit an updated Contingency Plan which can be applied to all HWM Units listed in Table 1 at least thirty (30) calendar days prior to start of operations at Building 280 CSU and Building 695 S/TUG,

18. TREATMENT AND STORAGE CAPACITIES

This Permit authorizes operation of the facility units for the waste codes and capacities as provided in the Part A of the approved Operation Plan and Tables 1, 2 and 3 of this Permit.

19. UNIT INSTALLATION

This Permit also authorizes installation of the equipment, tank systems or components as described in the approved Operation Plan. Any modifications to the designated units and/or permitted activities, other than those specifically designated herein, requires a permit modification approval by DTSC in compliance with the permit modification regulations in Title 22, California Code of Regulations.

PART V. COMPLIANCE SCHEDULE

Below is a summary of the major reporting requirements contained in this part of the permit. The summary is provided as a general guide and may not contain all the requirements. Please refer to the specific language of the referenced Permit Section for all the requirements.

Task	Due Date
Revert Area 612-4 and Rooms 104, 105, and 107 located in Building 612 to generator status (Permit Section IV.2)	Within 15 days of effective date of Permit
Submit closure plans for Building 233 and Area 514 (Permit Section IV.4)	180 days after effective date of Permit
Submit decontamination procedures (Permit Section IV.6)	180 days after effective date of Permit
Submit Small Scale Treatment Report (Permit Section IV.8(e))	March 15, 2000 (annually thereafter)
Submit engineer's certification for secondary containment system & tank system (Permit Section IV. 16(b))	60 calendar days after completion of construction
Submit construction schedule for new facilities (Permit Section IV. 16(d))	30 calendar days prior to construction
Submit as-built drawings of the new facilities (Permit Section IV. 16(e))	60 calendar days after completion of new facilities
Submit notification to DTSC to inspect newly constructed facilities (Permit Section IV.16(f)	30 calendar days prior to commencement of operations
Submit updated Contingency Plan (Permit Section IV. 17)	30 calendar days prior to start of Building 280 CSU and Building 695 operations

PART VI. CORRECTIVE ACTION

The Permittee is required to conduct corrective action at the facility pursuant to California Health and Safety Code sections 25200.10 and 25187.

On June 29, 1992, the United States Department of Energy (DOE) signed a Federal Facility Agreement (EFA) under Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) with the United States Environmental Protection Agency, the California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board, in the matter of LLNL. Section VII of the agreement, "Statutory Compliance/RCRA-CERCLA Integration," states that the parties intend to integrate DOE's CERCLA response obligations and RCRA corrective action obligations which relate to the release of hazardous substances, hazardous wastes, pollutants, or contaminants.

As stated in the FFA, the parties intend that remedial action selected, implemented and completed under this Agreement shall be deemed by the parties to be protective of human health and the environment such that remediation of releases covered by the FFA shall obviate the need for further corrective action under RCRA with respect to those releases.

A RCRA Facility Assessment (RFA) was completed at the facility in order to identify Solid Waste Management Units (SWMUs) and Areas of Concern (AOC) at the facility. The Permittee shall notify the DTSC in writing of any newly-identified SWMU(s), not specifically identified during the RFA, discovered during the course of groundwater monitoring, field investigations, environmental audits, maintenance, or other means, no later than 30 calendar days after discovery.

Table 1 - Hazardous Waste Management Units and their Storage and/or Treatment Capacities

Unit	Hazardous Waste Management Units	Storage Capacity	Treatment Capacity st= short ton=2000 lbs
1	Building 280 Container Storage Unit	18,140 ft^3	
Area 612 Storage/Treatment Unit Group			
2	Area 612 Tank Trailer Storage Unit	5,000 gal	
3	Area 612 Portable Tank Storage Unit	10,000 gal	
4	Building 612 Container Storage Unit	7,150 gal	
5	Building 612 Lab Packing Unit (Storage)	N/A[5]	
6	Building 612 Drum/Container Crushing Unit (Treatment)		600 st/year
7	Building 612 Size Reduction Unit (Treatment)		250 st/year[4]
8	Area 612-1 Container Storage Unit	38,400 ft^3	
9	Area 612-2 Container Storage Unit	10,560 gal	
10	Area 612-4 Receiving, Segregation, and Container Storage Unit	N/A[5]	
11	Area 612-5 Container Storage Unit	26,900 ft^3	
12	Building 614 East Cells Container Storage Unit	3,520 gal	
13	Building 614 West Cells Container Storage Unit	672 gal	
14	Building 625 Container Storage Unit	42,416 gal	
Area 693 Container Storage Unit Group			
15	Building 693 Container Storage Unit	141,240 gal	
16	Building 693 Annex Classified Waste Storage	3,060 ft^3	
17	Building 693 Freezer Unit (Storage)	30 gal	
18	Building 693 Roll Off Bin Storage	2,160 ft^3	
Area 695 Storage/Treatment Unit Group			
19	Building 695 Tank Farm (Treatment and Storage)	45,000 gal	325,000 gal/year4
20	Building 695 Tank Blending Unit (Treatment)		Included in #19 above
21	Building 695 Portable Blending Unit (Treatment)		Included in #19 above
22	Building 695 Cold Vapor Evaporation Unit (Treatment)		Included in #19 above
23	Building 695 Centrifuge Unit (Treatment)		55,000 gal/year4
24	Building 695 Solidification Unit (Treatment)		115 st/year4
25	Building 695 Shredding Unit (Treatment)		183 st/year4
26	Building 695 Filtration Unit (Treatment)		2,750 gal/yea4
27	Building 695 Drum Rinsing Unit (Treatment)		180 st/year
28	Building 695 Debris Washer Unit (Treatment)		45 st/year4
29	Building 695 Airlock Container Storage Unit	12,000 gal	
30	Building 695 Reactive Waste Storage Unit	12,400 gal	

Table 1 - Hazardous Waste Management Units and their Storage and/or Treatment Capacities

Unit	Hazardous Waste Management Units	Storage Capacity	Treatment Capacity st= short ton=2000 lbs
31	DWTF Portable Tank Storage Pad	22,000 gal	
32	Building 695 Reactive Waste Processing Area (RWP)		see (capacities for units 33 - 37)[1,3]
33	Building 695 Small Scale Treatment Laboratory (SSTL)		0.04 st/day[2]
34	Water Reactor (Treatment)		0.09 st/day[3,4]
35	Pressure Reactor (Treatment)		0.09 st/day[3,4]
36	Amalgamation Reactor (Treatment)		0.09 st/day[3,4]
37	Uranium Bleaching Unit (Treatment)		0.09 st/day[3,4]
38	Building 695 Gas Adsorption Unit (Treatment)		0.09 st/day[3,4]

1 - Small-scale treatment processes may be conducted in reactive waste processing area glove boxes.
2- The maximum collective throughput of all SSTL units is 0.04 short tons (38 kg) per day.
3- Water reactor, pressure reactor, amalgamation reactors and the uranium bleaching unit are each limited to 0.09 st/day
throughput and may be conducted in the RWP Area.
4- Baseline operating capacity from February 1997 Health Risk Assessment.
5- These units will convert to 90-day generator accumulation units and undergo delayed closure. See Permit Part IV, Condition 5.

Table 2 - Form Code and Waste Stream Description

Form Code[1]	Form code description	Typical waste streams
001	Lab packs of old chemicals only	• Lab packed surplus, out-of-date, or damaged packages of laboratory chemicals and discarded aerosol cans received from research and maintenance activities.
002	Lab packs of debris only	• Lab packed debris, asbestos materials, empty aerosol cans, batteries, capacitors, and other scrap equipment from research and maintenance activities.
003	Mixed lab packs	• Lab packed mixed debris and chemicals from research and maintenance activities. • Lab packed electrical equipment, cutting fluids and/or absorbents received from chemical spill remediation, leak collection, and laboratory maintenance and cleanup activities. • Lab packed batteries, transformers and debris from research and maintenance activities. Waste may include fluids from oil drip pans.
004	Lab packs containing acute hazardous wastes	• Lab packed materials containing acute hazardous waste.
101	Aqueous waste with low solvents	• Low-level radioactive waste water with solvents from sludge removal. Wastes may include lead, mercury, silver, benzene, carbon tetrachloride, chloroform, dichloroethane, dichloroethylene, TCEs, and other spent halogenated degreasing solvents. • Waste water with low concentrations of ignitable and/or halogenated solvents resulting from metal forming processes. Wastes may include ethylene and acetone.
102[2]	Aqueous waste with low other toxic organics	• Low-level radioactive coolant wash waters with low concentrations of organic compounds, metals and/or other toxic materials generated from operations such as machining. Wash waters may contain beryllium. • Waste water with low concentrations of organic compounds, metals and/or other toxic materials from operations such as machining, electronics fabrication, printing, and silk-screening. Wastes may include paint spray booth rinse water, coolants, antifreeze mixtures, and steam cleaning water. • Waste water with low concentrations of organic compounds, metals and/or other toxic materials generated from cleanup of chemical spills and leaky drums. Wastes may include coolants, peroxide-bleach solutions, antifreeze mixtures, paint spray booth rinse water, and steam cleaning water. • Waste water with low concentrations of organic compounds, metals and/or other toxic materials generated from laboratory research and maintenance operations. Waste may contain coolants, peroxide-bleach solutions and antifreeze mixtures.

Table 2 - Form Code and Waste Stream Description

(continued)

Form Code[1]	Form code description	Typical waste streams
103	Spent acid with metals	• Low-level radioactive acidic solutions and rinse waters with metals generated from research activities including electroplating and metal finishing operations. Wastes may include plating baths, chromic acid mixtures and nitric acid solutions from bright dip tanks, with at least one or more of the following metals: chromium, copper, aluminum, nickel, zinc, cadmium, lead or beryllium. • Acidic solutions and rinse waters with metals generated from research activities including: printed circuit board fabrication, copper vapor laser cleaning, electroplating etching and metal finishing operations. Wastes may include spent battery acid, plating baths, ferric chloride etching rinse water, chromic acid mixtures and nitric acid solutions from bright dip tanks, with at least one or more of the following metals: chromium, copper, aluminum, nickel, zinc, cadmium, or lead. • Acidic solutions and waste waters from spill cleanup of spent acid with metals from electroplating processes.
104	Spent acid without metals	• Spent acids with less than regulated levels of metals from research and maintenance activities; may contain radioactive constituents.
105	Acidic aqueous waste	• Radioactive acidic rinse waters from research activities or research-related production operations, including: laser window cleaning, metal finishing operations, printed circuit board manufacturing, and laboratory glassware cleanup operations. Wastes may include reactive anions (azide, bromate, chlorate, cyanide, fluoride, and sulfide anions). • Acidic aqueous rinse waters from research activities or research-related production operations, including: laser window cleaning, metal finishing operations, printed circuit board manufacturing, and laboratory glassware cleanup operations. Wastes may include nitric, acetic, sulfuric, hydrofluoric, hydrochloric, and phosphoric acids. • Radioactive corrosive spent acid with less than regulated levels of metals from laboratory research cleanup. • Acidic aqueous solutions from spill cleanup of acidic aqueous wastes from laboratory wastes, spent stripping and cleaning bath solutions from electroplating operations. • Acid aqueous waste including acids which are unstable at room temperatures (i.e. white fuming nitric acid).
106	Caustic solution with metals but no cyanides	• Caustic solutions and rinse waters with metals (but no cyanides) generated from research activities, including: printed circuit board fabrication, photographic processing, electroplating, etching, and other metal finishing operations. Wastes may include spent bleach, copper pyrophosphate, Qakite, sodium hydroxide, and ammonia solutions with at least one or more of the following metals: silver, chromium, copper, aluminum, nickel, or gold. • Caustic solution with metals (but no cyanides), resulting from metal recovery processes. Wastes may include one of the following metals: arsenic, mercury, and silver. • Low-level radioactive caustic solutions and rinse waters with metals (but no cyanides) from research activities, including: printed circuit board fabrication, photo processing, electroplating, etching, and other metal finishing operations.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
107	Caustic solution with metals and cyanides	• Caustic solutions and rinse waters with metals and cyanides generated from research activities including: printed circuit board fabrication, printing press operations, electroplating, etching, and other metal finishing operations. Wastes may include spent Qakite, DuPont-brand Riston-2000, and sodium hydroxide with cyanide, gold, silver, aluminum, or potassium hexacyanoferrate.
108	Caustic solution with cyanides but no metals	• Caustic solutions with cyanides but no metals from research and maintenance activities. Wastes may contain radioactive constituents.
109	Spent caustic	• Spent caustic waste from research and maintenance activities; may contain radioactive constituents.
110	Caustic aqueous waste	• Low-level radioactive caustic aqueous rinse waters from research activities or research-related production operations including: silk screening, metal finishing, printed circuit board fabrication, photographic processing and blue print operations. Wastes may include Oakite, peroxide-bleach solutions, and soap rinse waters. • Caustic aqueous rinse waters from research activities or research-related production operations including: silk-screening, metal finishing, printed circuit board fabrication, photographic processing, and blue print operations. • Spent caustic inorganic aqueous waste from laboratory cleanup spill residues. • Low-level radioactive spent caustic inorganic aqueous waste from laboratory cleanup of spill residues. • Corrosive inorganic aqueous solutions of spent caustic materials from cleaning and degreasing operations.
111	Aqueous waste with reactive sulfides	• Aqueous waste with reactive sulfides from research and maintenance activities.
112	Aqueous waste with other reactives	• Reactive or polymerizable inorganic aqueous liquids generated from research and maintenance activities.
113[2]	Other. aqueous waste with high dissolved solids	• Waste water with high dissolved solids from clean up of chemical spills and leaky drums. Wastes may include rain water from the hazardous waste and heavy equipment storage yards, spill cleanup mop water, and retention tank water. These waters may contain acids, Freon, oil, soap, and/or diesel fuel. • Inorganic aqueous solutions with high dissolved solids. Wastes may include photographic fixers and developers, surplus aqueous inorganic chemicals, weak acids and caustics, steam cleaning and soapy rinse water, and machine or shop waste coolants. • Low-level radioactive inorganic solutions which may include high dissolved solids from inorganic biomedical solutions, cyanide analysis waste, weak acid and caustics, rinse waters, machine or shop waste coolants and soapy rinse water.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
114	Other aqueous waste with low dissolved solids	• Low-level radioactive aqueous waste waters with low dissolved solids generated from research activities including metal finishing, machine coolant replacement and water jet cutting. • Aqueous waste waters with low dissolved solids, including rinse waters from the following operations: copper vapor laser operation, metal finishing, machine coolant replacement, water jet cutting, printed circuit board fabrication, and equipment cleaning. • Spill cleanup of low-level radioactive aqueous waste waters with low dissolved solids generated from research activities including metal finishing, machine coolant replacement and water jet cutting. • Aqueous waste waters from spill cleanup and remediation of toxic aqueous wastes with low dissolved solids. • Aqueous waste waters with low dissolved solids generated from research activities. Wastes may include rinse waters from the following operations: copper vapor laser operation, metal finishing, machine coolant replacement, water jet cutting, printed circuit board fabrication, and equipment cleaning. Waste may also includes floodwaters from broken pipes, deionized water, and soapy water.
115	Scrubber water	• Inorganic scrubber water from air pollution control device.
116	Leachate	• Leachate from wastewater treatment and maintenance activities. Wastes may contain radioactive constituents.
117	Waste liquid mercury	• Decommissioned electrical equipment used in research activities. Wastes may include ignitrons and thermostats. • Mercury liquid waste from laboratory and shop cleanup, clean out of sink traps, and collection of excess electron tubes and mercury switches.
119	Other inorganic liquids	• Inorganic liquids containing chromium and/or silver, and inorganic non-aqueous liquids generated from research activities. Waste may be ignitable and/or toxic. • Inorganic liquids from spill cleanup of listed non-aqueous wastes. • Low-level radioactive D-38 turnings, chips, sludge in water,
201[2]	Concentrated solvent-water solution	• Low-level radioactive concentrated solvent-water solution, ignitable from product solvent extraction. • Concentrated solvent-water solution from product solvent extraction (may be ignitable). • Aqueous organic solvent-water solution from the discontinued use of process equipment. Wastes may include methyl ethyl ketone and oxygenated solvents.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
202	Halogenated solvent	• Low-level radioactive waste with PCBs and/or halogenated solvents from laboratory research activities. Wastes may include organic fluids and water. • Halogenated solvents from lab operations such as cleaning, degreasing, and electronic manufacturing. Wastes may include chlorinated and fluorinated solvents such as Freon, TCE, PCE, DEC, and TCA. • Spill cleanup of aqueous halogenated solvents. • Radioactive halogenated solvents generated from cleaning tanks and equipment an operating research laboratories and machining shops. Wastes may include TCE and TCA, and may contain transuranic activity. • Spent halogenated solvents from the decommissioning of degreasing process equipment. Wastes may be ignitable.
203[2]	Non-halogenated solvent	• Low-level radioactive non-halogenated solvents generated from laboratory research and machine shop operations. Wastes may include isopropyl alcohol, benzene, tributyl phosphate, and methyl isobutyl ketone. • Non-halogenated solvents from research activities including equipment cleaning and maintenance operations, electroplating and metal finishing, and hydraulic fluid replacement. Wastes may include acetone, ethers, toluene, xylene, other ethylene glycol, tetrahydrofuran, MEK and alcohols. Many of these wastes may be characteristically ignitable. • Aqueous non-halogenated solvents from remediation activities and discontinued use of process equipment.
204	Halogenated/ non-halogenated solvent mixture	• Low-level radioactive aqueous solution of halogenated/non-halogenated solvents from research activities including equipment cleaning and maintenance operations. Wastes may include spent halogenated solvents (e.g. TCE and chloroform) and PCBs. • Halogenated/non-halogenated solvent mixture from cleaning and degreasing operations. Wastes may include tetrachloroethylene, methylene chloride, chlorobenzene, acetone, and isobutanol. • Aqueous solution of halogenated/non-halogenated solvent mixture waste from laboratory cleaning and degreasing activities. Wastes may include spent halogenated wastes and oxygenated and hydrocarbon solvents. Wastes may be ignitable. • Halogenated/non-halogenated solvent mixture from cleaning and degreasing operations. Wastes may include tetrachloroethylene, methylene chloride, chlorobenzene, acetone, and isobutanol. Wastes may be ignitable.
205[2]	Oil-water emulsion or mixture	• Oil-water emulsion or mixture from flush rinsing wastes and cleanup of oil spills. • Rinse and surface runoff waters that are potentially contaminated with oil. Wastes may include steam cleaning water from washing of vehicles and machine parts, motoroil, hydraulic oil, and soaps. • Aqueous oil-water emulsion. Wastes may also include barium, chromium, lead, benzene, dichloroethylene, tetrachloroethylene, and trichloroethylene. Wastes may be ignitable. • Low-level radioactive D-38 turnings, chips, sludge in an aqueous-based solution (e.g., Trim-Sol).

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
206[2]	Waste oil	• Low-level radioactive waste oils generated from laboratory research and machine shop operations. Wastes may include hydraulic and vacuum pump oils, uranium, beryllium, mercury and/or solvents. • Waste oils from oil changes, drainage of transformers and non-PCB capacitors, and disposal of excess or expired products. Wastes may include transformer oil, motor oil, vacuum pump oil, and waste oils from non-PCB capacitors. • Low-level radioactive waste oil from cleanup of oil spills. Wastes may include cadmium, lead, silver, halogenated and non-halogenated solvents. • Oil drained from decommissioned electrical transformers. Wastes may include cadmium, lead, silver, and halogenated and non-halogenated solvents. Wastes may be ignitable.
207	Concentrated aqueous solution of other organics	• Low-level radioactive concentrated aqueous solution of other organics, including spent process liquid, ignitable wastes, and spent halogenated solvents. • Concentrated aqueous solution of other (non-solvent) organics including spent process liquids, ignitable wastes, and spent halogenated materials from research activities and surface preparation operations. • Concentrated aqueous solution of other (non-solvent) organics from the disposal of off-specification materials. • Concentrated aqueous solution of other organics generated from Superfund remediation activities. • Concentrated aqueous solution of other (non-solvent) organics from surface preparation operations. Waste may be ignitable.
208	Concentrated phenolics	• Concentrated phenolics from research and maintenance activities. Wastes may contain radioactive constituents.
209	Organic paint, ink, lacquer, or varnish	• Organic paint, ink, lacquer, or varnish waste generated from activities including equipment cleanup; the disposal of excess and waste paint; and laser printer, copier and graphic production. • Organic paint, ink, lacquer, or varnish wastes which may include lacquer thinner. Waste may be ignitable.
210	Adhesives or epoxies	• Adhesives or epoxies generated by general carpentry, floor tile installation, and other craft activities. Wastes may include empty containers with adhesive or epoxy residues and excess product collected during cleanup. • Aqueous waste of adhesives or epoxies from routine cleanup of spills. • Adhesives or epoxies, polymeric resin wastes from aged or surplus ignitable organics contaminated with low-level radioactivity.
211[2]	Paint thinner or petroleum distillates	• Organic paint thinner or petroleum distillates from activities including the cleanup of painting equipment and machine parts found in laboratories and shops. Wastes may include paint thinner, kerosene, mineral spirits, lacquer thinner, Stoddard solvent, gasoline and diesel fuel. • Wastes generated from the cleanup of underground storage tanks containing ignitable petroleum distillates.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
212	Reactive or polymerizable organic liquid	• Reactive or polymerizable organic liquids generated from research activities. Wastes may include peroxides, polymeric hardeners, catalysts and uncured monomers. • Wastes generated from spill cleanup of reactive or polymerizable organic liquids.
219	Other organic liquids	• Low-level radioactive waste (containing H-3, C-14, P-32, S-35 and/or uranium) from laboratory and machine shop operations. Wastes may include oil, alcohols, kerosene, acetic acid, benzene, and scintillation gels and cocktails from tritium analysis. • Organic liquids received from document reproduction and print shop activities. Wastes may include activators, photocopier toners, and dispersants. Most items in this category are excess or out-of-date copy machine, printer and print shop chemicals. • Wastes generated from spill cleanup or decommissioned document reproduction equipment containing organic liquids, which may be ignitable and/or reactive. • Non-halogenated organic liquids from research and maintenance operations, including photographic processing, machining, paint shop operations, shop excess, and laboratory cleanup. Wastes may include photocopier toners, photographic fixers, (stable non-reactive) curing agents, cutting fluids, surplus paints, and rust preventatives.
301[2]	Soil contaminated with organics	• Soil from clean up activities, surface spills and subsurface soil investigations. These wastes may include concrete debris, crank case oil, hydraulic fluid, gasoline, diesel, and plastic sheeting. • Soil or sand contaminated with organic compounds generated from drilling operations, research, and cleanup operations including floor repair, soil sampling, oil shale distillation, and trash cleanup. Wastes may include concrete, and soil contaminated with spent oil shale/oil. • Low-level radioactive soil generated from cleanup activities. This soil may be contaminated with uranium, solvents and metals.
302	Soil contaminated with inorganics only	• Soil cuttings or sand contaminated with inorganics generated from subsurface exploratory investigations. This soil may include concrete debris; soil may be contaminated with low-level radioactivity, lead, and/or mercury. • Soil and/or sand contaminated with toxic inorganic compounds generated by bead blasting and subsurface investigations. • Soil contaminated with inorganic compounds from cleanup activities. Wastes may include soil and sand contaminated with chromium. • Low-level radioactive gravel produced from firing table tests and research activities. • Soil contaminated with inorganic compounds.
304[2]	Other “dry” ash, slag, or thermal residues	• Dry ashes, slag or thermal residue generated from laboratory research and gun testing activities. Wastes may include debris from target tanks, gun soot, solidified ash, and coal ash. • Residue from explosive waste treatment.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
305	"Dry" lime or metal hydroxide solids chemically "fixed"	• Metal hydroxide solids (including sodium hydroxide solids) from laboratory operations which are chemically fixed. Wastes may be dried sludges and excess products.
306	"Dry" lime or metal hydroxide solids not chemically "fixed"	• Metal hydroxide solids (such as sodium hydroxide solids) from laboratory operations which are not chemically fixed. Wastes may include dried sludges and excess products. • Wastes generated from the cleanup of metal hydroxide solid spills.
307[2]	Metal scale, filings, or scrap	• Low-level (potentially) radioactive inorganic scrap metal generated from remodeling, laboratory cleanup, and machine shop operations, including metal shavings, source material, and old equipment (scrap metal/pipes/lead bricks and uranium beds). • Scrap metal from research and maintenance including metal finishing, cleanup, equipment, construction, electroplating, and demolition (pipes, tanks, pumps, tools, fuses, stainless steel vessel, duct work, hardware, lead bricks and oil drained transformers). • Scrap metal (inorganic scrap) generated from laboratory remodeling and cleanup, and projectile testing experiments. Wastes may include metal scrap/bricks/shavings, excess material, discarded old equipment, glass, electrodes, tanks, plumbing, and fluorescent lights, heat exchangers, and ducting. • Low-level radioactive lead pieces and bricks contaminated with depleted uranium and/or beryllium during off-site explosion and/or projectile research activities. • Radioactive (or potentially radioactive) scrap metal generated from laboratory research and maintenance, including laboratory cleanup. Wastes may include lead bricks and metal shavings. These materials may contain transuranic activity.
308[2]	Empty or crushed metal drums or containers	• Empty or crushed metal drums or containers from research activities, including packaging, print processing, and shop wastes. Wastes may include empty cans, drums, bottles, boxes, and other containers. • Empty containers potentially contaminated with low-level radioactivity. • Removal of discontinued process equipment, i.e., retention tanks.
309	Batteries or battery parts, casings, cores	• Discarded batteries from the battery shop and other locations. Wastes may include lithium, lead-acid, nickel-cadmium, mercury, and alkaline batteries. Most batteries are spent or damaged and may have been drained.
310[2]	Spent solid filters or adsorbents	• Spent HEPA filters and absorbents generated by research activities and facility maintenance. Wastes may contain low-level radioactivity, solvents, lead, beryllium, and/or cadmium. • Spent filters and absorbents from research activities and facility maintenance, including machine shop and instrument maintenance and cleanup. Waste may include paper, drysit, chemwipes, cleaning pads, rags, silica gel, oil filters, and molecular sieves. • Spent filters and absorbents from spill cleanup activities and maintenance operations. Wastes may include rags, chemwipes, drysorb, kitty litter, and vermiculite.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
311	Asbestos solids and debris	• Asbestos and asbestos-contaminated material generated from abatement activities. Wastes from laboratory cleanups and building renovation including pipe logging, floor tiles, rock and tar paper, transite siding and pipe, blackboards and fiberglass. • Asbestos brake shoes from vehicle maintenance. • Potentially radioactive asbestos and material contaminated with asbestos from lab cleanup. Wastes may contain transuranic activity.
312	Metal-cyanide salts/chemicals	• Metal-cyanide salts and/or chemical waste from research and maintenance activities. Wastes may contain radioactive constituents.
313	Reactive cyanide salts/chemicals	• Reactive-cyanide salts and/or chemical waste from research and maintenance activities. Wastes may contain radioactive constituents.
314	Reactive sulfide salts/chemicals	• Reactive sulfide salts and/or chemical waste from research and maintenance activities. Wastes may contain radioactive constituents.
315	Other reactive salts/chemicals	• Reactive salts/chemicals that are from waste operations including unused/excess chemicals from printing and metal finishing and reactive laboratory chemicals (e.g., phosphorous, titanium tetrachloride, sodium, and lithium hydride). • Inorganic reactive metals and salts from the decommissioning of process equipment.
316	Other metals salts/chemicals	• Inorganic metal and salts from research activities, including machine shop operations, laboratory cleanup, collection of out-of-date or excess products, laser operations, and tooling replacement. Wastes may include ferric salts and alloys, oxide powders, and other salts and alloys. • Depleted uranium hydride powder generated by research activities. This waste contains low-level radioactivity and is potentially ignitable and reactive.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
319[2]	Other waste inorganic solids	• Low-level radioactive inorganic trash generated by research and laboratory cleanup activities. Wastes may include pipettes, funnels, beakers, gloves, paper, filters, plastics, sponges, floor dry, and other lab trash. Wastes may be contaminated with beryllium, lead, and/or low-level radioactive materials. • Waste inorganic trash from research and cleanup activities, including printing press, laser, battery shop, and building maintenance operations. Wastes may include metal, glass, filters, paper, work clothes, rubber materials, and other laboratory wastes. • Waste inorganic solids from equipment decommissioning and spill cleanup activities. Wastes may include gloves, wipes, plastic sheeting, rags, dry sorb, soot, acids, mercury (broken thermometers), antifreeze, and debris from gun tank experiments. • Waste inorganic trash from research and cleanup activities, including laboratory research, road patching and building maintenance operations. Wastes may include paper, work clothes, glass filters, rubber materials, plastic shavings, and other laboratory wastes. • Filter cake, which may contain low-level radioactivity, generated from rotary-drum vacuum filtration of aqueous waste waters, which may contain non-halogenated and halogenated solvents and metals (arsenic, cadmium, barium, lead, chromium, mercury, and silver). Filter cake consists of moist diatomaceous earth and chemical precipitates. • Inorganic waste contaminated with toxics from cleanup and decommissioning of process equipment. Wastes may be contaminated with low-level radioactivity.
401	Halogenated pesticide solid	• Discarded out-of-date halogenated pesticide solids.
402	Non-halogenated pesticide solid	• Discarded out-of-date non-halogenated pesticide solids.
403	Solid resins or polymerized organics	• Waste solid resins or polymerized organics from research activities which may be contaminated with low-level radioactivity. Wastes may be corrosive and/or reactive. • Waste solid resins or polymerized organics from document reproduction and print shop activities. Wastes may include curing agents, toner, and dry film photopolymers.
404	Spent carbon	• Discarded out-of-date products or chemicals containing spent carbon generated from dry ink developers and ribbons. Wastes may include graphite powder and carbon black. • Spent granular carbon from ground water remediation. • Low-level radioactive activated charcoal or carbon from research activities.
405	Reactive organic solid	• Reactive organic solids generated from laboratory research and maintenance activities including the collection of excess products. Wastes may include RTV catalysts.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
406	Empty fiber or plastic containers	• Empty fiber or plastic containers from cleanup or sample preparation activities. Wastes may include empty plastic drums or empty plastic chemical bottles. Most containers are empty, but may contain chemical residues or residue from biodegradable steam cleaning soap.
407	Other halogenated organic solids	• Halogenated organic solids which may contain metals, non-halogenated solvents, halogenated solvents, and/or low-level radioactivity generated from the following activities: laboratory waste removal, decommissioning of laboratory process equipment, filter replacement, battery replacement, and sludge removal. Wastes may include barium, cadmium, lead, selenium, chloroform, non-halogenated solvents, and spent halogenated solvents. Wastes may be ignitable and corrosive.
409[2]	Other non-halogenated organic solids	• Non-halogenated solids from laboratory waste and disposal of clothing and personal protective equipment. Wastes may be contaminated with low-level radioactivity and non-halogenated solvents. Wastes may be ignitable. • Electrical, vacuum and machining equipment from research and maintenance operations which may contain low-level radioactivity and PCB-laden oils. Wastes may include decommissioned transformers, capacitors, power supplies, voltage regulators, and milling machines. • Other non-halogenated organic solids from biomedical research activities and production-derived, one-time and intermittent processes. Wastes may include capacitors and used agar plates.
501	Lime sludge without metals	• Lime sludge without metals generated from plant maintenance activities. • Low level radioactive lime sludge without metals generated from plant maintenance activities.
502	Lime sludge with metals/metal hydroxide sludge	• Lime sludge with metals generated from plant maintenance activities. • Low level radioactive lime sludge with metals generated from plant maintenance activities.
503	Waste water treatment sludge with toxic organics	• Waste water treatment sludge with toxic organic compounds generated from plant maintenance of cooling towers. Wastes primarily consist of cooling tower resins. • Low-level radioactive waste water treatment sludge with toxic organics, from sludge removal processes. Wastes include spent halogenated and non-halogenated solvents.
504	Other waste water treatment sludge	• Waste sludge, that may contain low-level radioactivity, from the cleanup of basins and sumps. Wastes may contain oils, solvents, lead, mercury, chromium, and/or traces of cyanide.
505	Untreated plating sludge without cyanides	• Untreated plating sludge without cyanides from research and maintenance activities. • Wastes may contain radioactive constituents.
506	Unreacted plating sludge with cyanides	• Unreacted plating sludge with cyanides from laboratory waste water treatments. • Wastes may include cyanide and lead.
507	Other sludge with cyanides	• Other sludge with cyanides from research and maintenance activities. Wastes may contain radioactive constituents.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
508	Other sludge with sulfides	• Waste water treatment sludge with reactive sulfides from research activities.
509	Sludge with other reactives	• Sludge with other reactives from research and maintenance activities. Wastes may contain radioactive constituents.
510	Degreasing sludge with metal scale or filings	• Degreasing sludge with metal scale or filings from sludge removal process. Wastes may include spent halogenated solvents and low-level radioactivity.
511	Air pollution control device sludge	• Air pollution control device sludge from waste treatment and maintenance activities. • Wastes may contain radioactive constituents.
512	Sediment or lagoon dragout contaminated with organics	• Sediment or lagoon dragout contaminated with organics from maintenance activities. Wastes may contain radioactive constituents.
513	Sediment or lagoon dragout contaminated with inorganics only	• Sediment or lagoon dragout contaminated with inorganics from maintenance activities. Wastes may contain radioactive constituents.
514	Drilling mud	• Drilling mud from sub-surface investigations. Wastes may include mud, dirt, possible organic and/or inorganic contaminants, and low-level radioactivity.
515	Asbestos slurry or sludge	• Asbestos slurry or sludge from research or maintenance activities.
516	Chlorine or other brine sludge	• Chlorine or other brine sludge from waste treatment or maintenance activities.
519[2]	Other inorganic sludges	• Low-level radioactive inorganic sludge (containing phosphorous-32, and/or sulfur-35) from cleaning out hulking tanks and from water jet cuttings. Wastes may include aqua-sorb, kerosene, abrasive garnet, metals, chloro-solvents, and biowaste. • Other inorganic sludges from sludge removal processes, cleaning and degreasing operations, surface coating/preparation or other surface processes. Wastes may include halogenated solvents, non-halogenated solvents, and metals (barium, cadmium, chromium, lead, mercury, silver). • Waste inorganic sludges from spill cleanup activities. Wastes may include pigs, wipes, and drysorb.
601	Still bottoms of halogenated solvents or other organic liquids	• Still bottoms of halogenated solvents or other organic liquid from research or maintenance activities.
602	Still bottoms of non-halogenated solvents or other organic liquids	• Still bottoms of non-halogenated solvents or other organic liquid from research or maintenance activities.

Table 2 - Form Code and Waste Stream Description

(continued)

Form code[1]	Form code description	Typical waste streams
603	Oily sludge	• Oily sludge from maintenance operations including steam cleaning, roofing, car washing and cleanup of processing equipment. Wastes may include oil, asphalt, and other sump wastes. • Wastes from spill cleanup of oily sludge.
604	Organic paint or ink sludge	• Organic paint/ink sludge from cleanup or research activities including silk screening, product cleanup, cold vaporization, and Xerox copying. Wastes may include paint solids with drysorb, sludge from spent photo-fixers, Xerox waste sludge, and film development evaporator bottoms.
605	Reactive or polyinerizable organics	• Reactive or polyinerizable organics from research or maintenance activities.
606	Resins; tars, or tarry sludge	• Resins, tars or tarry sludges. Wastes may be ignitable. Tarry residues or sludges from surplus, off-specification organics. Wastes may be ignitable.
607	Biological treatment sludge	• Treated biological sludge from research or maintenance activities.
608	Sewage or other untreated biological sludge	• Sewage or other untreated biological sludge from research or maintenance activities.
609	Other organic sludges	• Other organic sludges, from sludge removal and sludge dewatering. Wastes may include lead, spent halogenated solvents and low-level radioactivity.
701	Inorganic gases	• Inorganic gases from research activities. Wastes may include diborane, hydrogen sulfide, fluorine, nitrogen dioxide, sulfur dioxide, and decaborane. Wastes may be reactive.
801	Organic gases	• Organic gases from research activities, including Laser experiments, welding, and disposal of excess lab materials. Wastes may include alkanes and alkenes.

Notes:

1 The 100 series form codes are aqueous wastes which may contain organics up to 10 vol %; the 200 series form codes are liquids containing 10 vol % or more organics. Aqueous wastes have a pH in the range of 2 to *12.5*. Low dissolved solids means solids up to 10 vol %. High dissolved solids means solids 10 vol % or greater.

2 Examples of waste forms that may also be generated at Site 300 and shipped to the Main Site for treatment or consolidation for commercial treatment or disposal.

Table 3- Storage and Treatment Unit Waste Stream Configuration

Name of storage or treatment unit	Waste Types[1] stored managed in unit	Waste[2] streams by form code
Building 280 Container Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous (includes TRU); Solid	001 002 003 004 009 301 302 304 305 306 307 308 309 310 311 312 313 314 315 316 319 403 404 405 407 409
Area 612-4 Receiving, Segregation, and Container Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous (includes TSCA-regulated PCB liquids), asbestos; Liquid, solid, and gas	All form codes
Area 612 Portable Tank Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 208 210 211 212 219 312 313 315 503 504 505 506 509 512 513 514 515 519 603 604 605 608 609
Area 612 Tank Trailer Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 208 210 211 212 219 312 313 315 503 504 505 506 509 512 513 514 515 519 603 604 605 608 609
Area 612-1 Container Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous (includes TRU); Solid	001 002 003 004 009 301 302 304 305 306 307 308 309 310 311 312 313 314 315 316 319 401 402 403 404 405 406 407 409
Area 612-5 Container Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous (includes TRU); Solid	001 002 003 004 009 301 302 304 305 306 307 308 309 310 311 312 313 314 315 316 319 401 402 403 404 405 406 407 409
Building 612 Lab Packing Packaging Container Storage Unit (S0l)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 612 Drum/Container Crushing Unit (X02)[d]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	308 406 3l9[3]

Table 3- Storage and Treatment Unit Waste Stream Configuration Continued

Name of storage or treatment unit	Waste Types[1] stored managed in unit	Waste[2] streams by form code
Building 612 Size Reduction Unit (X99)[e]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 612 Container Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 614 West Cells Container Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 614 East Cells Container Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Area 612-2 Container Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 625 Container Storage Unit (S01)[a]	RCRA hazardous, mixed, and nonRCRA hazardous (includes TRU and TSCA-regulated PCB liquids), asbestos; Liquid, solid, and gas	All form codes
Building 693 Container Storage Unit Group (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 693 Annex Classified Waste Storage	RCRA hazardous, mixed, nonRCRA hazardous; Solid	302 307 308 316 319 403 407
Building 693 Yard—Freezer Storage Unit (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	105
Building 693 Yard—Roll-Off Bin Storage (S01)[a]	RCRA hazardous, nonRCRA hazardous; Solid	302 307 308 319 406
Building 695 Liquid Waste Processing Area (X99[e]) Gas Adsorption System	RCRA hazardous, mixed, nonRCRA hazardous; Gas	701 801
Building 695 Liquid Waste Processing Area (S02,[b] T01[c])	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and sludge	101 102 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 211 219 305 313 314 315 316 319 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 519 607 608 609

Table 3- Storage and Treatment Unit Waste Stream Configuration Continued

Name of storage or treatment unit	Waste Types[1] stored managed in unit	Waste[2] streams by form code
Building 695 Liquid Waste Processing Area (X99[e]), Waste Blending Station	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and sludge	101 102 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 211 219 305 313 314 315 316 319 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 519 607 608 609
Building 695 Liquid Waste Processing Area (X02[d]), Shredder/Chopper	RCRA hazardous, mixed, nonRCRA hazardous; Solid	307 308 319 406
Building 695 Liquid Waste Processing Area (X99[e]), Centrifuge	RCRA hazardous, mixed, nonRCRA hazardous; Liquid	101 102 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 211 219 516 519 607 608 609
Building 695 Liquid Waste Processing Area (X99[e]), Drum Rinsing Station	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	308 406
Building 695 Liquid Waste Processing Area (X99[e]), Cold Vapor Evaporator	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and sludge	101 102 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 211 219 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516
Building 695 Liquid Waste Processing Area (X99e), Debris Washer	RCRA hazardous, mixed, nonRCRA hazardous; Solid and sludge	301 302 307 308 310 319 406
Building 695 Liquid Waste Processing Area (X99[e]), Filtration Module	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and sludge	101 102 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 211 219 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 519 607 608 609

Table 3- Storage and Treatment Unit Waste Stream Configuration Continued

Name of storage or treatment unit	Waste Types[1] stored managed in unit	Waste[2] streams by form code
Building 695 Liquid Waste Processing Area (X99[e]), Solidification System	RCRA hazardous, mixed, nonRCRA hazardous; Liquid, solid, and sludge	101 102 110 112 113 114 116 119 201 202 203 204 205 206 207 219 305 306 313 314 315 316 319 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 519 607 608 609
Building 695 Airlock (S01)[a]	RCRA hazardous, mixed, and nonRCRA hazardous; Liquid, solid, and gas	All form codes
Building 695 Reactive Waste Storage Rooms (S01)[a]	RCRA hazardous, mixed; Liquid, solid, and gas	All form codes
Building 695 Reactive Waste Processing Area (X99[e])	RCRA hazardous, mixed; Liquid, solid, and gas	All form codes
Building 695 Small Scale Treatment Lab (X99[e])	RCRA hazardous, mixed; Liquid, solid, and gas	All form codes
DWTF Portable Tank Storage Pad (S01)[a]	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 119 201 202 203 204 205 206 207 208 210 211 212 219 312 313 315 503 504 505 506 509 512 513 514 515 519 603 604 605 608 609
Building 695 Reactive Waste Processing Area/Small Scale Treatment Laboratory Water Reactor (X99)	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	111 112 212 313 314 315 405 508 509 605
Building 695 Reactive Waste Processing Area/Small Scale Treatment Laboratory Pressure Reactor (X99)	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	111 112 212 313 314 315 405 508 509 605

Table 3- Storage and Treatment Unit Waste Stream Configuration Continued

Name of storage or treatment unit	Waste Types[1] stored managed in unit	Waste[2] streams by form code
Building 695 Reactive Waste Processing Area Uranium Bleaching (X99)	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	102 205 307
Building 695 Small Scale Treatment Laboratory Mercury Amalgamation (X99)	RCRA hazardous, mixed, nonRCRA hazardous; Liquid and solid	117

1 NonRCRA hazardous waste means California-only hazardous waste as defined in 22 CCR Part 261. Mixed includes only waste characterized or listed according to RCRA 40 CFR Part 261 as hazardous that also has a radioactive constituent. Hazardous waste is defined by 40 CFR Part 261.

2 Although incompatible waste codes are listed together, waste management practices will prevent the mixing or contact of incompatible waste.

3 Excludes filtercake and fluorescent lighting tubes and lighting ballasts.

PCB = Polychlorinated biphenyl.

RCRA = Resource Conservation and

TRU = Transuranic.

TSCA = Toxic Substances Control Act. Recovery Act.

Part A Process Codes

a 501 = Container storage.

b S02 = Tank storage.

c T0l = Tank treatment.

d X02 = Miscellaneous (other Subpart X) mechanical processing.

e X99 = Miscellaneous (other Subpart X) treatment.

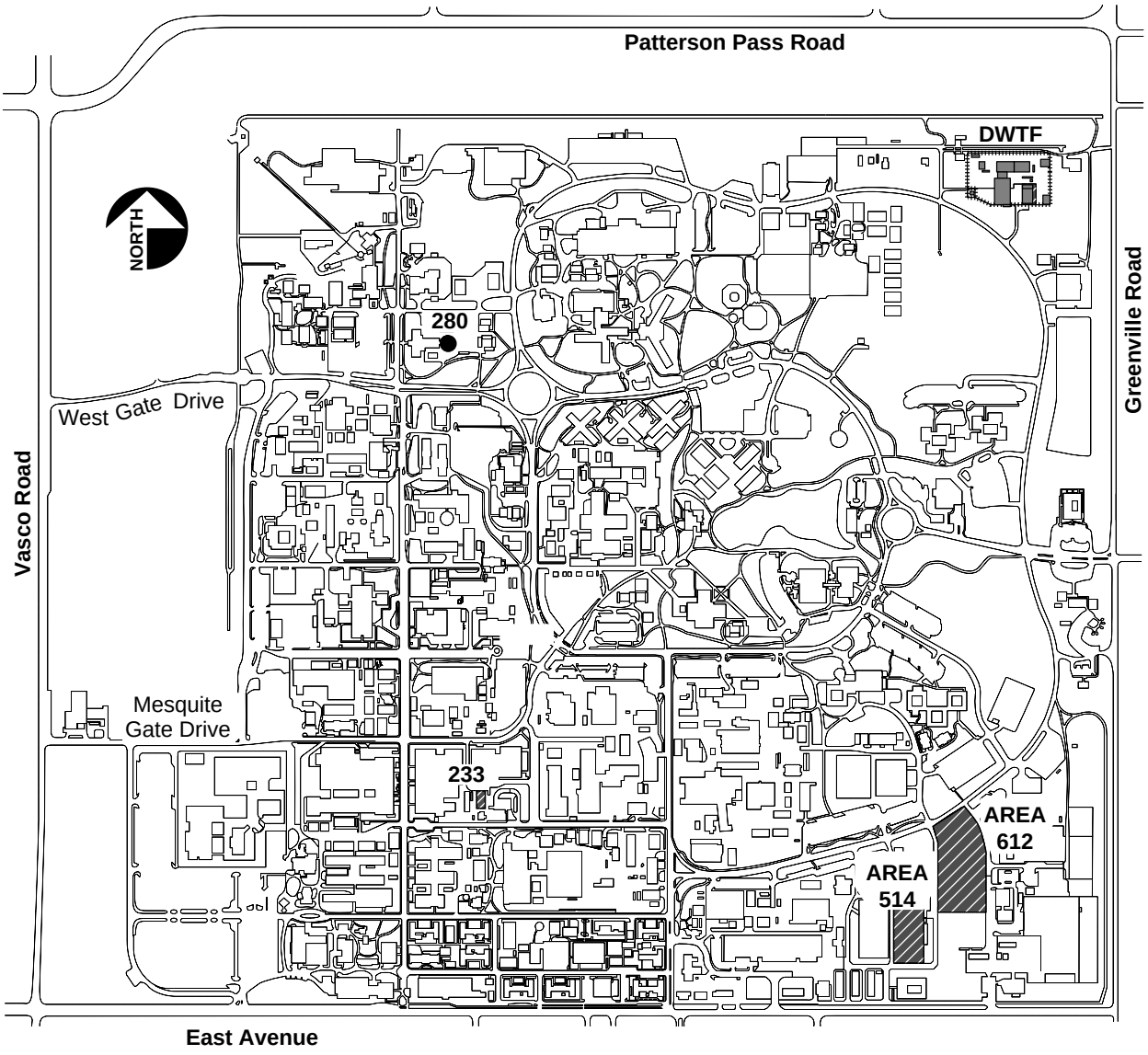


Figure 1. LLNL Main Site Map Showing Locations of the DWTF and Other Hazardous Waste Management Facilities

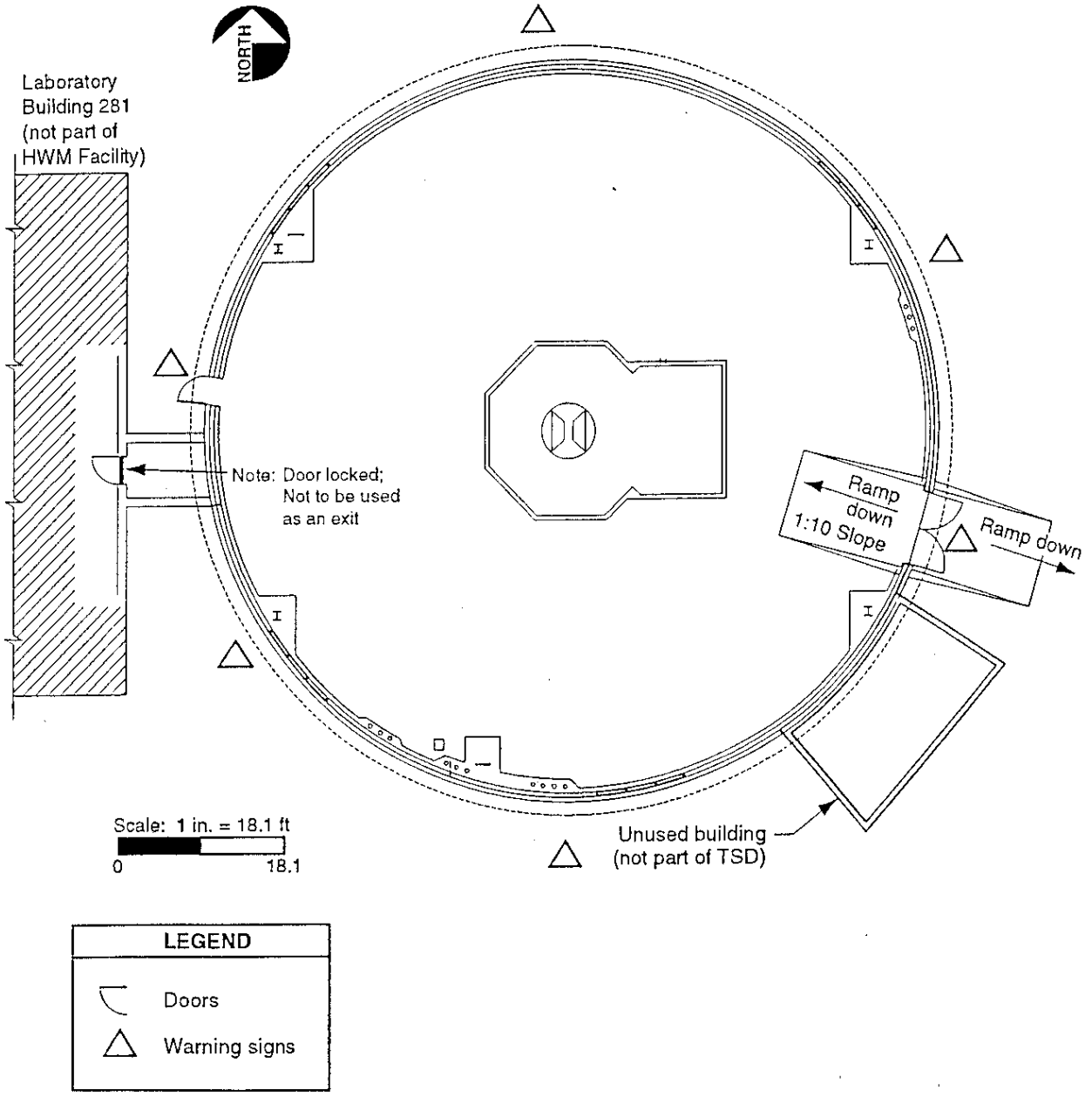


Figure 2. Building 280 Container Storage Unit

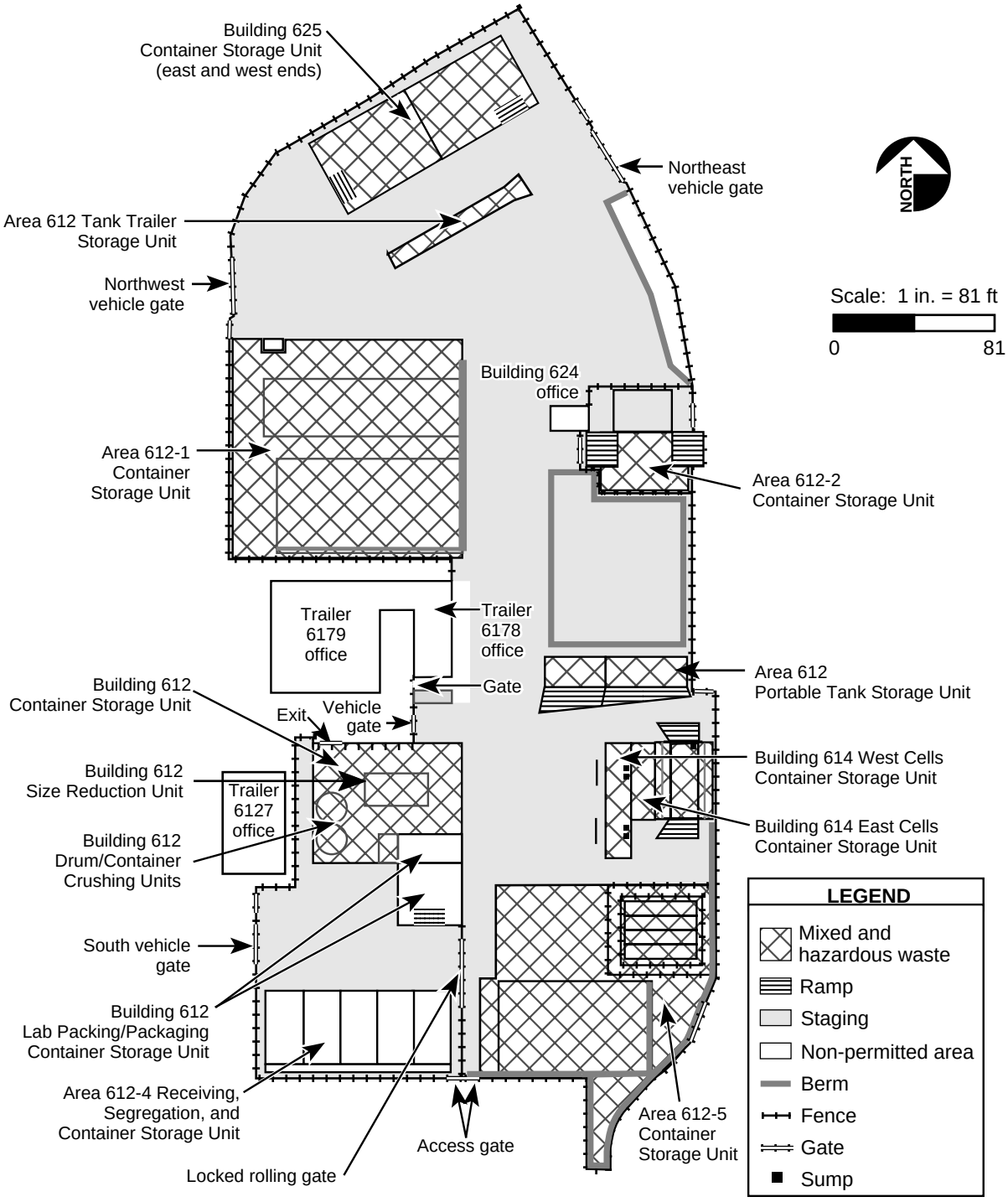


Figure 3. Area 612 Container Storage/Treatment Unit Group

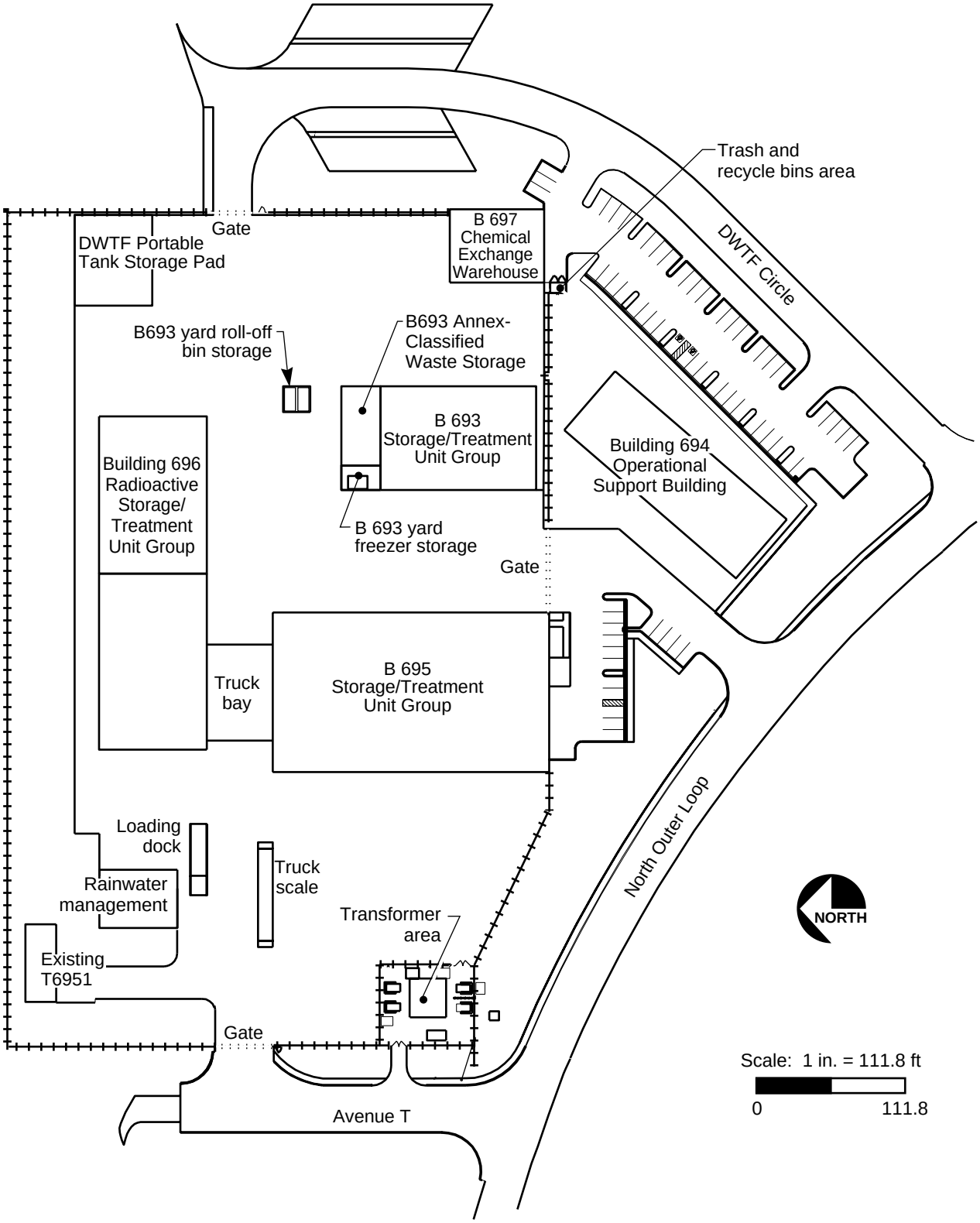


Figure 4. Location of the Waste Treatment/Storage Units of the DWTF

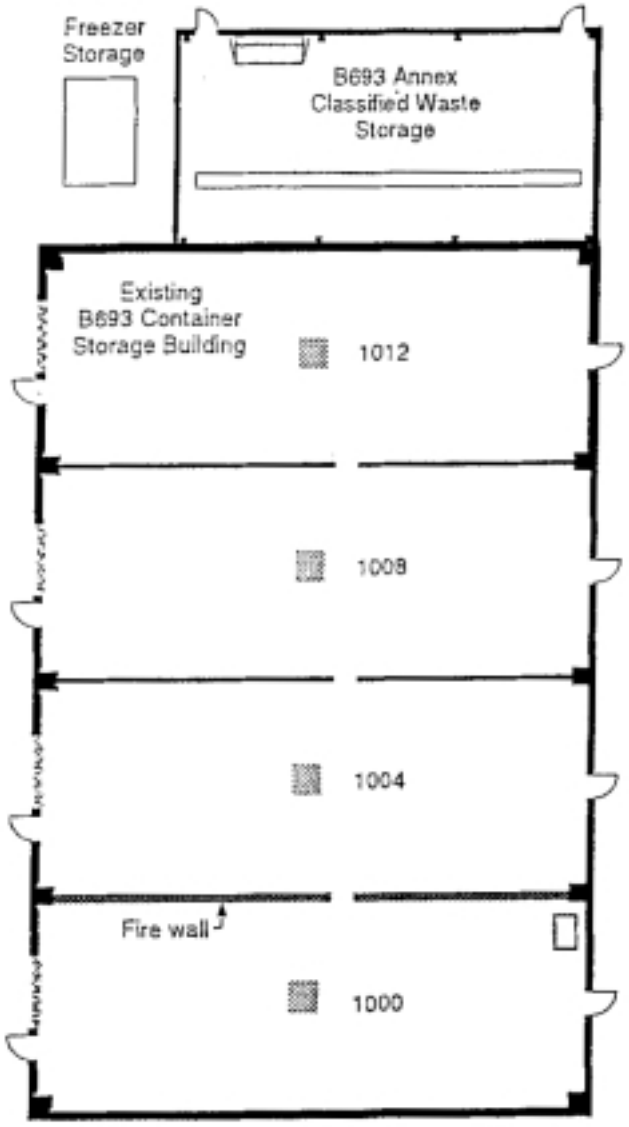


Figure 5. Building 693 Container Storage Unit Group Layout

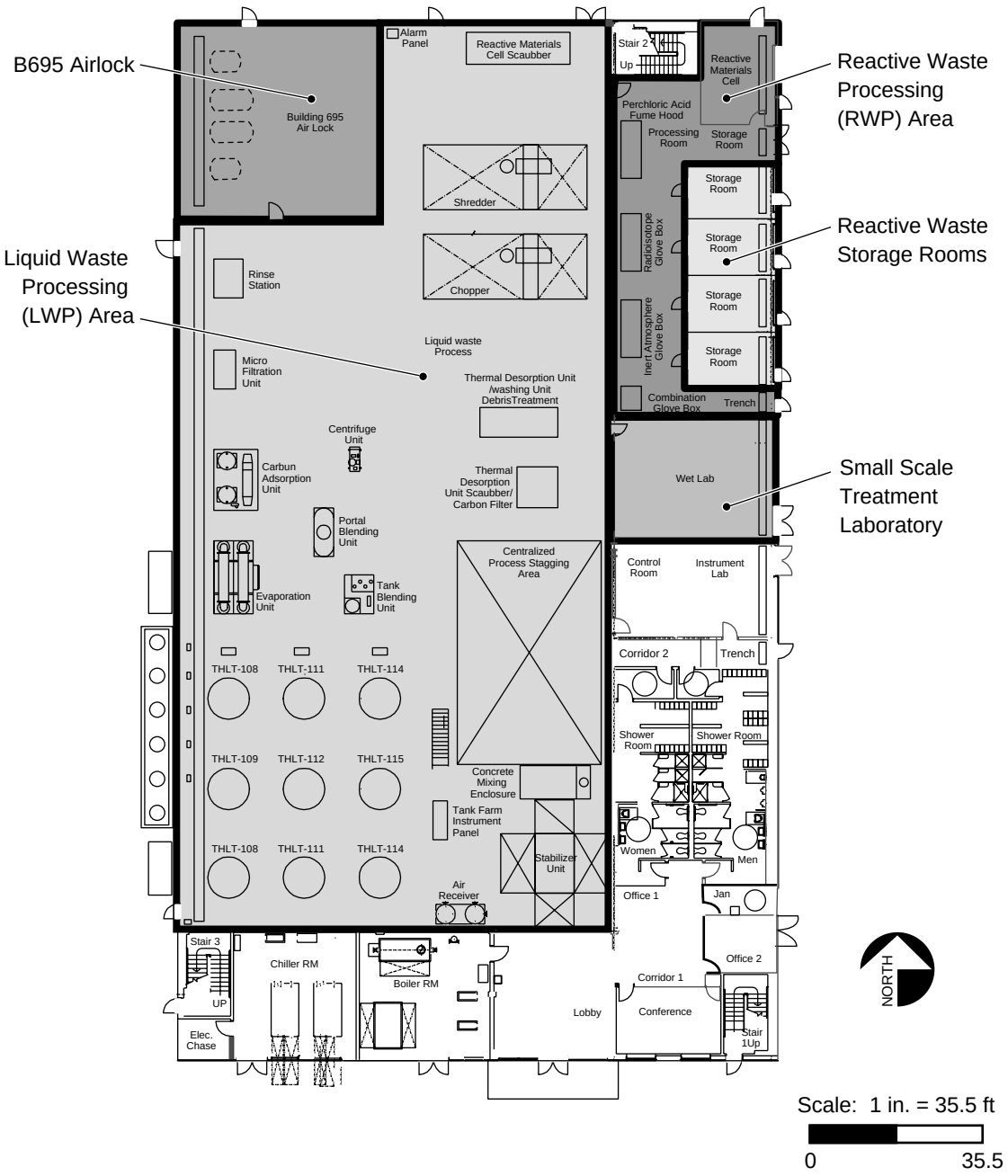


Figure 6. Building 695 Storage Treatment Unit Group Layout

APPENDIX A
PERMIT MODIFICATION HISTORY

Effective date January 21, 2001

A LLNL letter dated December 22, 2000, listed a total of 33 Class 1 permit modifications which became effective thirty days from the date of the letter. A summary of the modifications included in that package follows, along with a reference to applicable sections in the Operations Plan:

1. The lab packing description is revised to include over packing and container sizes to be consistent with 49 CFR 173.12(b)(2)(ii) for lab packed and over packed containers. A paragraph is added to summarize the acceptance process for waste that is over packed or lab packed. (Volume 1, Part VI, section 2.4.3)

2. HWM facility personnel who generate, characterize, and track HWM waste are identified. (WAP section 2.3.1)

3. Clarification is provided that only WDR fields applicable to the waste type are completed prior to or during the waste's acceptance. (WAP section 3.2.1)

4. The definitions of "generator", LLNL institution, HWM Division employee, and program employee are clarified. (WAP sections 1.1, 1.3, 2.1, 2.3, 3, and 8)

5. "HWM facility technician" is changed to "HWM technician" as the type of position that performs the waste check. (WAP section 4.3)

6. Language in the Operations Plan regarding characterization of rainwater collected in a berm is changed to more accurately reflect the requirements of LLNL's National Pollutant Discharge Elimination System permit and Waste Discharge Requirements Order. (WAP section 5.5.2.1)

7. Clarification is provided to confirm that both containerized and uncontainerized solid wastes are sampled using EPA-approved methods. (WAP sections 6.2, 6.2.2)

8. A section is added to discuss how waste generated by HWM Division facility personnel is characterized and tracked. (WAP sections 3, 3.2, 3.3)

9. Clarification is provided to confirm that the Waste Discharge Authorization Record (WDAR) and Material Safety Data Sheets (MSDSs) are kept by the Operations and Regulatory Affairs Division (ORAD), not HWM. (WAP sections 3.1, 13.1)

10. Clarification is provided to confirm that the types of items that are exempt from sampling and analysis also include (1) small quantities of unused chemicals, reagents, or working solutions to be lab packed or over packed, (2) hazardous wastes which present or could present an extreme hazard for which there are health and safety concerns, and (3) wastes that have insufficient volume for sampling and analysis. (WAP section 4.3)

11. Clarification is provided that a container may be labeled before or after a sample is placed in the container, as long as the labeling occurs before leaving the possession of the sampler. (WAP sections 6.2.1, 6.2.2)

12. The BB-Rule 300 hour exemption is incorporated for processing RCRA hazardous wastes with greater than 10% organics. (Volume 1, Part IV, section 5.2; Part VI, Table VI-6)

13. The language is broadened to clarify that all personnel with sampling training may take waste samples. (WAP section 6)

14. Clarification is provided to confirm that when a MSDS is used in a waste's characterization, MSDS reference information is listed on the WDR. (WAP section 4.3.3)

15. Clarification is provided on exactly how waste treatment residues are tracked by HWM Division. (WAP sections 12, 12.1)

16. Clearer definitions of "newly generated waste" and "unprofiled waste" are provided. (WAP sections 3, 8)

17. The requirement for Site Treatment Plan (STP) codes to be listed on the WDR is deleted. (WAP sections 4.3.3, 13.3.1)

18. Clarification is provided that disposable sampling equipment is managed as appropriate for its characterization. (WAP section 6.2)

19. The analytical requirements to apply when profiling a wastestream are clarified. (WAP section 8)

20. The acronym list in the Waste Analysis Plan (WAP) is updated. (WAP section 14)

21. The glossary in the WAP is updated. (WAP Appendix A)

22. Revise references to the Environmental, Safety and Health (ES&H) Integration Worksheet to reflect the new institutional Integration Work Sheet (IWS). (Volume 1, Part VI, sections 1, 2.1, 2.1.6, 4.2.1, 5.3.3; Part VI, Table VI-6)

23. Revise references to LLNL's Health and Safety Manual and LLNL's Environmental Compliance Manual to LLNL's Environment, Safety and Health Manual. (Volume 1, Part VI sections 2.1, 2.1.1, 2.6.5, 4.2.7, 6.2, 6.4; Part VI references)

24. Add pallets made of metal that are consistent with compatibility requirements of the waste being stored to existing secondary containment pallets made of fiberglass and plastic. (Volume 1, Part VI, section 2.4.6)

25. Clarify that the term "largest allowable container" means the quantity of total waste held in an individual container and not the maximum potential volume for an individual container used as an over pack or exteror secondary container. (Volume 7, Part XIV.1, Table XIV.1-4)

26. The language regarding movement of containers within the Hazardous Waste Manage Division yards was clarified and modified to include the use of pallets with container stabilization edges. (Volume 1, Part IV, section 1.3.1)

27. The language regarding the movement of containers was clarified to specify that double stacked liquid wastes should never be moved. (Volume 1, Part VI, section 2.4.1)

28. A more specific description of the construction design for weather protection of Building 614 East cell and Building 614 West Cell was provided. (Volume 1, Part VI, sections 2.4.7, 2.6; Part VI, Table VI-2, and Volume 7, Part XIV.1, section 1.8)

29. It is specified that radioactive waste constituent releases and migration are assessed as part of periodic radiation surveys of the radiologically controlled areas of Hazardous Waste Management treatment and storage areas, as opposed to hazardous waste constituent releases and migration assessments. (Volume 1, Part VI, section 2.6.5)

30. Illustrations of the Area 612 Facility have been modified to clearly delineate the permitted areas from the non-permitted areas. Also, Figure 3 of LLNL's Hazardous Waste Facility Permit is revised to show that the covered pad adjacent to and east of the Building 614 East Cell is part of the permitted unit. (Volume 7, Part XIV.1, Figures XIV.1-1 and XIV.1-2h)

31. The description of the management of polychlorinated biphenyl (PCB) wastes has been updated to include recent changes to the Toxic Substances Control Act regulations. (Volume 1, Part VI, section 2.4.8)

32. The personnel security gates have been removed from the Building 614 East Container Storage Unit (CSU). (Part A Permit Application Part IV, photo #7)

33. The designation "DWTF Beneficial Occupancy" on Table 1 in Exhibit A has been replaced with "DWTF Activation".

Effective July 16, 2001

The LLNL letter of December 22, 2000 also requested a Class 1* permit modification which was not acted upon by DTSC until settlement of CEQA litigation was effected.

1. Fingerprint analytical methods were updated to include spectrophotometer instrumental methods for metal fingerprint analysis and instrumental conductivity for PCBs. (WAP Table 5)

Effective September 26, 2001

The Settlement Agreement and Stipulation for Entry of Order Retaining Jurisdiction To Enforce Order entered in Alameda Count Superior Court Case No. 821072-4, Tri-Valley Cares v. The Department of Toxic Substances Control, directed that the defendant DTSC make the following listed modifications to the permit.

1. Part III, section 7, Waste Minimization Conditions, was modified to require that the Permittee submit documents required by SB 14 to DTSC.

2. Part IV, section 8, Small Scale Treatment, was modified to clearly specify the precise physical locations that various small scale units could be operated, along with quantity limitations for each particular process.

3. Part IV, section 9, Storage in Tanks and Containers, was modified to specify the staging conditions for the handling of incompatible wastes.

4. Table 1 and Table 4 of the Waste Analysis Plan were modified to remove discrepancies which had previously existed between waste stream descriptions and required analytical test methods specified.

In addition to the above, the Department made the following modifications to the Permit.

1. The Effective Date of the Permit was corrected to November 19, 1999.

2. Appendix A, Permit Modification History, was added to the Permit.

EXHIBIT A

UCRL-AR-126352

Environmental Protection Department
Hazardous Waste Management

Transition Plan:

Transfer of Existing Waste Treatment Units

to the

Decontamination and Waste Treatment Facility

September 1997

Lawrence Livermore National Laboratory

University of California Livermore, California 94551

Contents

Tables

Transition Plan: Transfer of Existing Waste Treatment Units to the Decontamination and Waste Treatment Facility (DWTF)

1. Transition Summary

The transition plan for DWTF facilities involves Buildings 693 and 695, which will replace several existing waste management units located within the current Hazardous Waste Management (HWM) Area 514 facility. The transition from the old treatment/storage units to the DWTF will comprise the following actions:

- The following operations will be transferred to Building 695:
  - Building 513 Solidification Unit
  - Area 514-1 Cold Vapor Evaporation Unit
  - Area 514-1 Portable Blending Unit (Waste Blending Unit)
  - Area 514-1 Tank Blending Unit
  - Area 514-1 Centrifugation Unit
  - Area 514-1 Carbon Adsorption Unit (Gas Adsorption Unit)
- When the DWTF is fully operational, the following operations will be closed:
  - Area 514 Quadruple Tank Unit
  - Area 514 Waste Water Filtration Unit
  - Area 514 Waste Water Treatment Tank Farm Unit
  - Area 514 Bulking/Blending Unit
- The following container storage units (CSUs) ultimately will be closed, and waste will be stored in Building 693 or Building 695 of the DWTF:
  - Building 513 CSU
  - Area 514-1 CSU
  - Area 514-2 CSU
  - Area 514-3 CSU

2. Transition Schedule

To avoid shutting down waste-management operations, the transition will be carried out in phases. The scheduled time periods for each phase are shown in Table 1. The activities of each phase are described below.

- **Phase A**

  Relocation of

  – Building 513 Solidification Unit

- **Phase B**

  Relocation of

  – Area 514-1 Centrifugation Unit

  – Area 514-1 Portable Blending Unit

  – Area 514-1 Tank Blending Unit

- **Phase C**

  – Relocation of drums from Building 513 to Building 693 or Building 695

  – RCRA closure of Building 513

- **Phase D**

  Relocation of

  – Area 514-1 Cold Vapor Evaporation Unit

  – Area 514-1 Carbon Adsorption Unit

- **Phase E**

  Relocation of waste liquids from

  – Area 514 Quadruple Tank Unit

  – Area 514 Waste Water Filtration Unit

  – Area 514 Waste Water Treatment Tank Farm Unit

RCRA closure of

- Area 514 Quadruple Tank Unit
- Area 514 Waste Water Filtration Unit
- Area 514 Waste Water Treatment Tank Farm Unit

- **Phase F**

  Relocation to Building 693 or Building 695 of waste drums in

  - Area 514-1 Container Storage Unit
  - Area 514-2 Container Storage Unit
  - Area 514-3 Container Storage Unit

  RCRA closure of

  - Area 514-1 Container Storage Unit
  - Area 514-2 Container Storage Unit
  - Area 514-3 Container Storage Unit

3. Transition Milestones

The transition process is triggered by various DWTF project milestones. These milestones, which are described below, indicate the general stage of the transition process. This overall process may occur sequentially for each DWTF building.

1. Beneficial occupancy

   The point at which the contractor completes its part of the construction project and LLNL's Plant Engineering Department may begin its share of the construction and installation work

2. Activation

   The point at which transfer of the equipment from old HWM facilities to the DWTF may begin and new treatment units installed

3. Operational readiness review / regulatory review

   - The point at which HWM demonstrates to DOE that all procedures are in place, all relevant personnel training has occurred, and that all equipment has been tested.

- The point at which HWM demonstrates to the Department of Toxic Substances Control (DTSC) that all required paperwork is in place (e.g. procedures), and that as-builts match the design that was submitted in the Part B.

4. Trial treatment

   The point at which newly installed equipment will undergo a trial operational period, including refinements to the equipment, as necessary, and retesting.

5. Final operational acceptance

   The point at which equipment is proved effective and ready for day-to-day operational use

6 Shut-down and closure

   The point at which old treatment units (those replaced by new treatment units) are to be shut down and closed under RCRA closure requirements (storage areas and pads beneath treatment units that have been moved to DWTF will also be closed under RCRA requirements)

Activation (#2 above) triggers the movement of waste treatment units from the Area 514 facility to the DWTF. This can only occur after beneficial occupancy is achieved and Plant Engineering work has been completed. Once the units have been moved, they must be tested (#4 above). Replacement treatment units also must be tested. Simultaneous treatment will occur in the Area 514 facility and the DWTF during this time. Treatment capacities will be carefully monitored to avoid exceeding the volumes allowed by the permit (see Section 4 of this Transition Plan). The duration of the trial treatment phase cannot be determined exactly; therefore, the transition schedule will be adjusted as needed during the testing period.

When the new or transferred equipment is judged fully acceptable (#5 above), day-to-day operations will begin at the DWTF. At this point, the Area 514 counterpart equipment can be shut down, and the obsolete treatment units can undergo RCRA closure (#6 above).

The pads underneath the Area 514 units moved to the DWTF will also be closed per RCRA. Waste drums will be moved from their Area 514 storage location to DWTF, and the Area 514 storage areas will be closed under RCRA. Closures will be scheduled so they do not interfere with waste treatments that may still be taking place.

The order of transition was chosen to be consistent with the general milestones discussed previously. Additionally, some units are scheduled to be moved or closed sooner than others because of operational considerations. Rationale for these phasing decisions is as follows:

- **Phase A—**relocate solidification unit to the DWTF. The removal of this unit from Building 513 will have minimal impact on the overall operation. The goal is to empty Building 513 as soon as possible because the DWTF will be better suited for this activity. This unit transfer activity won't interfere with operations still taking place in the Area 514 facility.
- **Phase B—**relocate centrifugation unit, portable blending unit, and tank blending unit to DWTF. These will be the first units idle after treating Area 514's liquid waste. Therefore, these units can then be moved to the DWTF without causing adverse conditions.
- **Phase C—**relocate stored waste drums from Building 513 to the DWTF and begin RCRA closure of Building 513. As previously stated, the goal is to empty and then close Building 513 as soon as possible. This relocation will not interfere with operations still taking place in the Areas 514 facility.
- **Phase D—**relocate the evaporation and carbon adsorption units. These units will be the next treatment units to become idle after treating Area 514's liquid waste. Because these units work in tandem, they must be moved together.
- **Phase E—**transfer any liquid waste remaining at Area 514 to DWTF and close the quadruple-tank, waste water-filtration, and tank farm units. It is anticipated that the DWTF replacement units will be fully operational at this point (step #5, Final Operational Acceptance).
- **Phase F—**relocate stored waste drums to DWTF and close the Area 514-1, Area 514-2, and Area 514-3 container storage units. Because the waste will be treated in the DWTF, the waste inventory will be moved there. The container storage units in the Area 514 facility can then undergo RCRA closure.

4. Aggregate Storage and Treatment Capacities

- **Storage**

  The total aggregate storage capacity for all HWM facilities will not exceed the storage capacity designated in the permit. Further, Area 514 facility container storage units will not exceed interim storage capacities.

- **Treatment**

  While Area 514 facilities are being moved to the DWTF, operations at any older units will remain within interim-status daily design capacities, per the 1991 Part A. However, if a comparable unit is operating at the DWTF at the same time, total treatment capacities

for both facilities will not exceed the annual treatment capacity found in the permit.

Operating and safety procedures will be developed and in place before the transition phase begins, thus ensuring the total annual throughput stays within permit requirements. Further, facilities operating under interim status also will operate within the interim-status requirements.

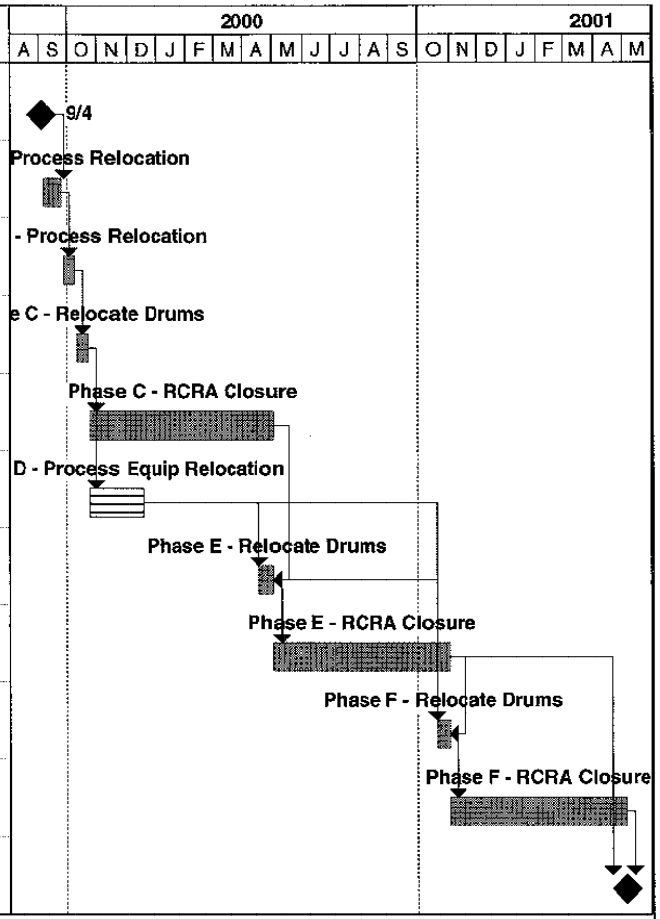
5. Environmental, Safety, and Health (ES&H) Procedures

HWM receives support from ES&H Team 4, which comprises professional industrial hygienists, a health physicist, an environmental analyst, an industrial safety expert, a fire engineer, and other professionals. This team will review and provide input to HWM procedures to address the transition process. The team will also be on hand to supervise the actual transition process.

Treatment units to be moved will be contained (i.e., in boxes, double-wrapped, or contained by other means) to avoid releasing potential contamination into the atmosphere. The Team 4 professionals will ensure that workers, public, and environment are protected from chemical or radiological exposure.

Table 1: Schedule for Transition Phases

ID	Task Name	Duration	Start*	Finish*	Predecessors
1	DWTF Activation	0d	9/4/99	9/4/99	
2	Phase A - Process Relocation	15d	9/6/99	9/24/99	1
3	Phase B - Process Relocation	10d	9/27/99	10/8/99	2
4	Phase C - Relocate Drums	10d	10/11/99	10/22/99	3
5	Phase C - RCRA Closure	136d	10/25/99	5/1/00	4
6	Phase D - Process Equip Relc	40d	10/25/99	12/17/99	4
7	Phase E - Relocate Drums	10d	4/18/00	5/1/00	6,5FF
8	Phase E - RCRA Closure	132d	5/2/00	11/1/00	7
9	Phase F - Relocate Drums	10d	10/19/00	11/1/00	6,7,8FF
10	Phase F - RCRA Closure	132d	11/2/00	5/4/01	9
11	RCRA Closure Complete	0d	5/4/01	5/4/01	10,8



*Start and finish dates are considered estimates and are subject to change based on the permit effective date.

Project:
Date: 9/9/96

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Critical Task